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Mac OS 8

Our exclusive QuickStart guide takes you inside Apple's fast and flexible new OS...page 65

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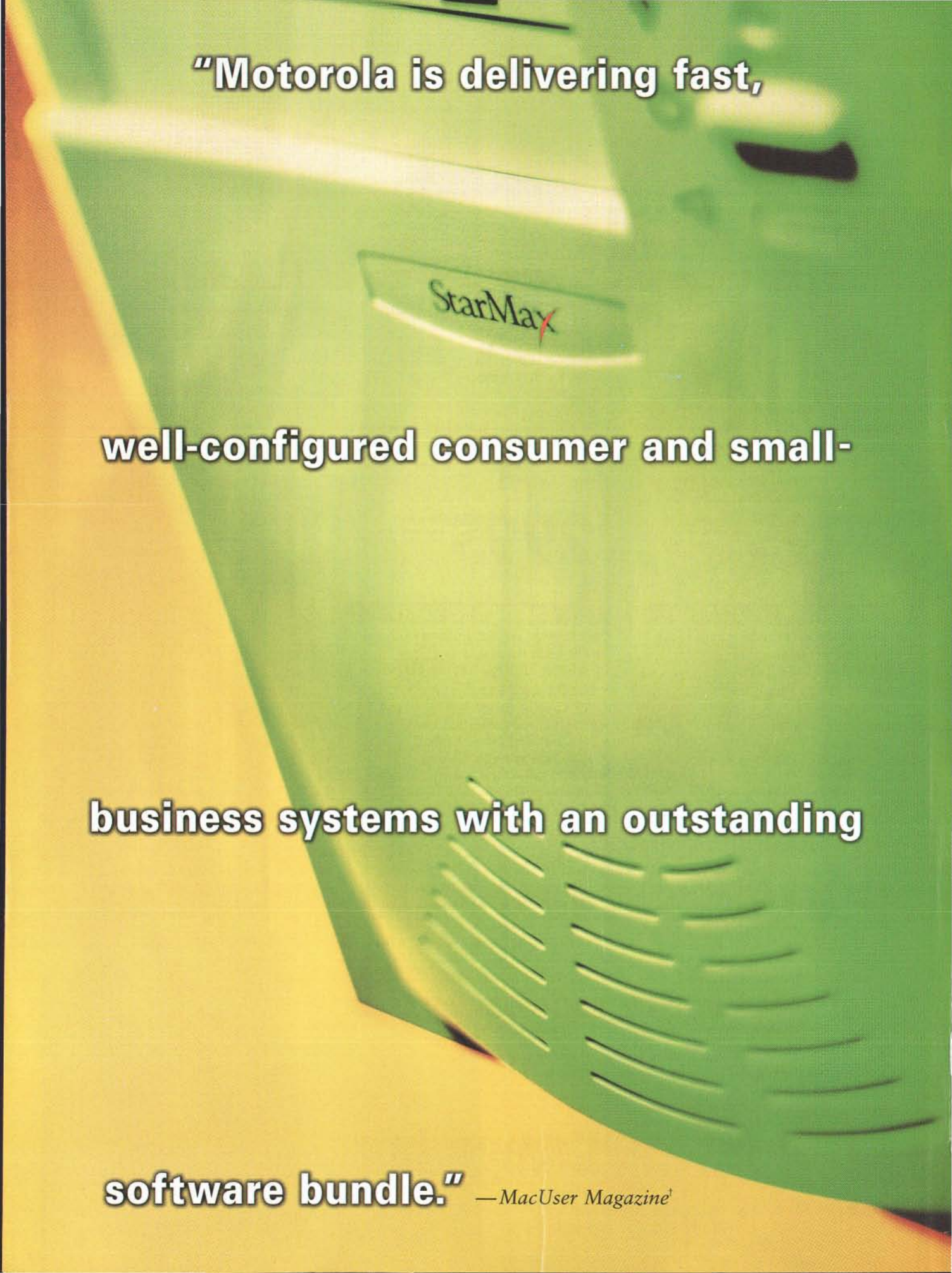
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MacUser

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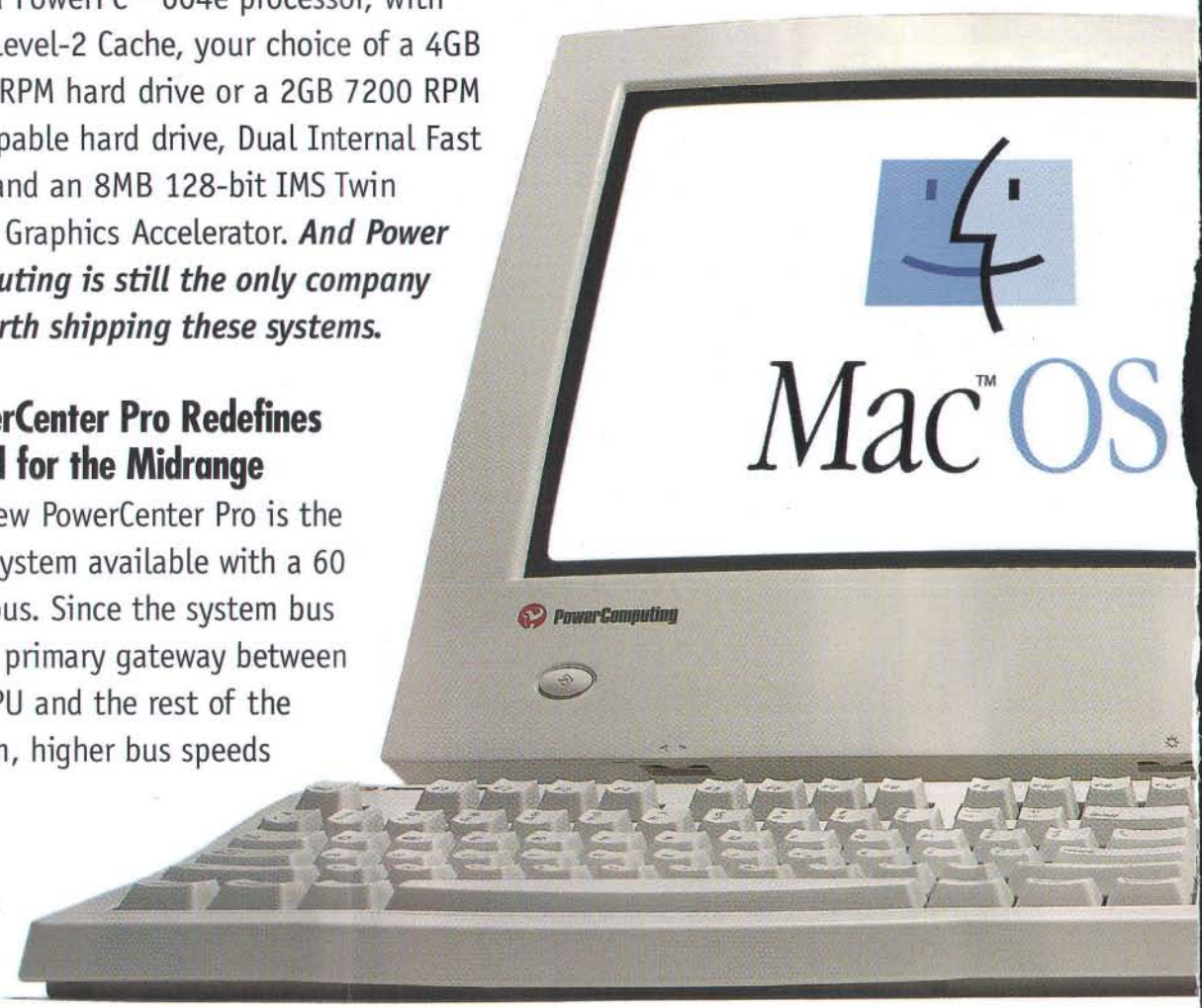
PowerCenter Pro Redefines Speed for the Midrange

The new PowerCenter Pro is the only system available with a 60 MHz bus. Since the system bus is the primary gateway between the CPU and the rest of the system, higher bus speeds



CPU UPGRADEABLE

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Mac OS 8

Apple's latest OS upgrade makes us declare, 8 is enough.

Its speed, stability, elegance, and handy new shortcuts are enough reasons for users to put Mac OS 8 on every 68040- or PowerPC-based Mac OS system still in service. Get it now, because it'll be a long wait for the industrial-strength Rhapsody.

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Pop Art

Pop out of your flatland, and join the 3-D reality. The shape of the art world is changing. Whether you're designing 3-D animation for Hollywood blockbusters or crafting your next blockbuster business presentation, one of the thirty-one 3-D apps we examine will render you a model 3-D artist.

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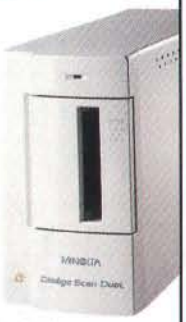

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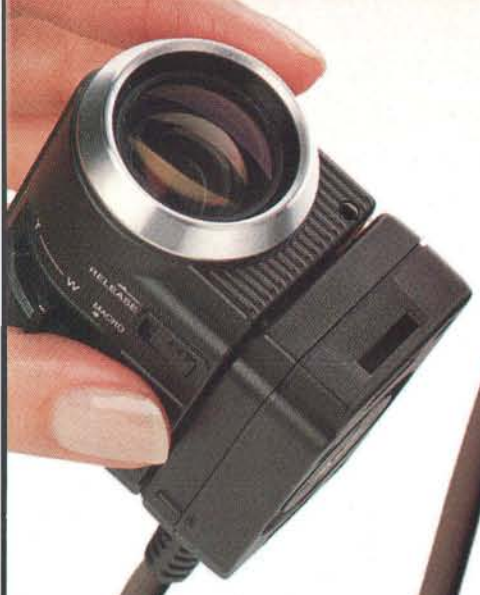

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Understanding JAVA
Does the thought of JAVA cause you to be in a state of confusion? *MacUser's* editors are here to help clarify and give you a better understanding of JAVA. This feature gives an overview of the different technologies behind JAVA as well as explains and defines the multitude of terms that are linked with it. Also, get some great advice on how to make JAVA run more efficiently and smoothly on your Mac. This is one informative and helpful article you won't want to miss.

FutureShare
If you want to be up-to-date on Apple's latest networking technology, look to this November issue to fill you in on the details. Code-named FutureShare, this is Apple's next-generation software that will allow more Internet capabilities thus providing a good environment for intranetworking. Our editors take a close look at how well this enabling technology works.

Protecting Artwork
This GraphicsUser feature illustrates the importance of protecting digital images from copyright infringement. Ben Long will explain how digital watermarking technology can ensure that your artwork does not get stolen over the Internet or on print. This is crucial for anyone in the artistic field.

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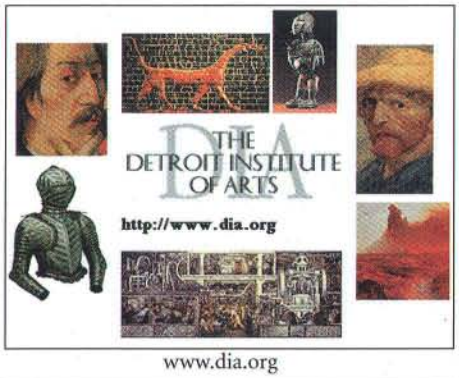

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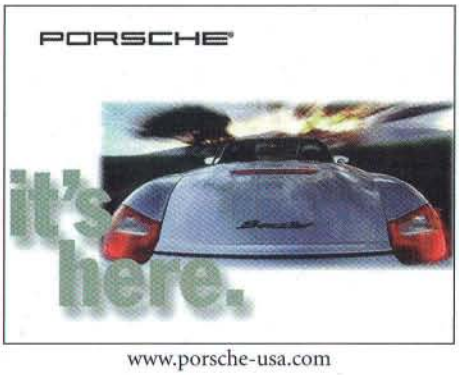

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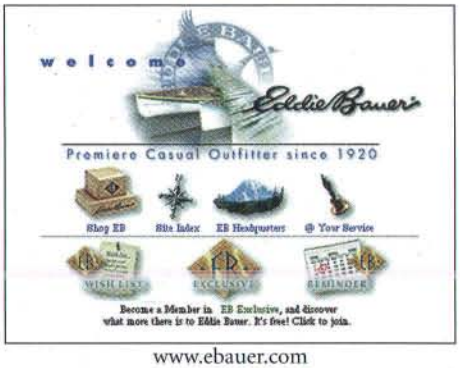

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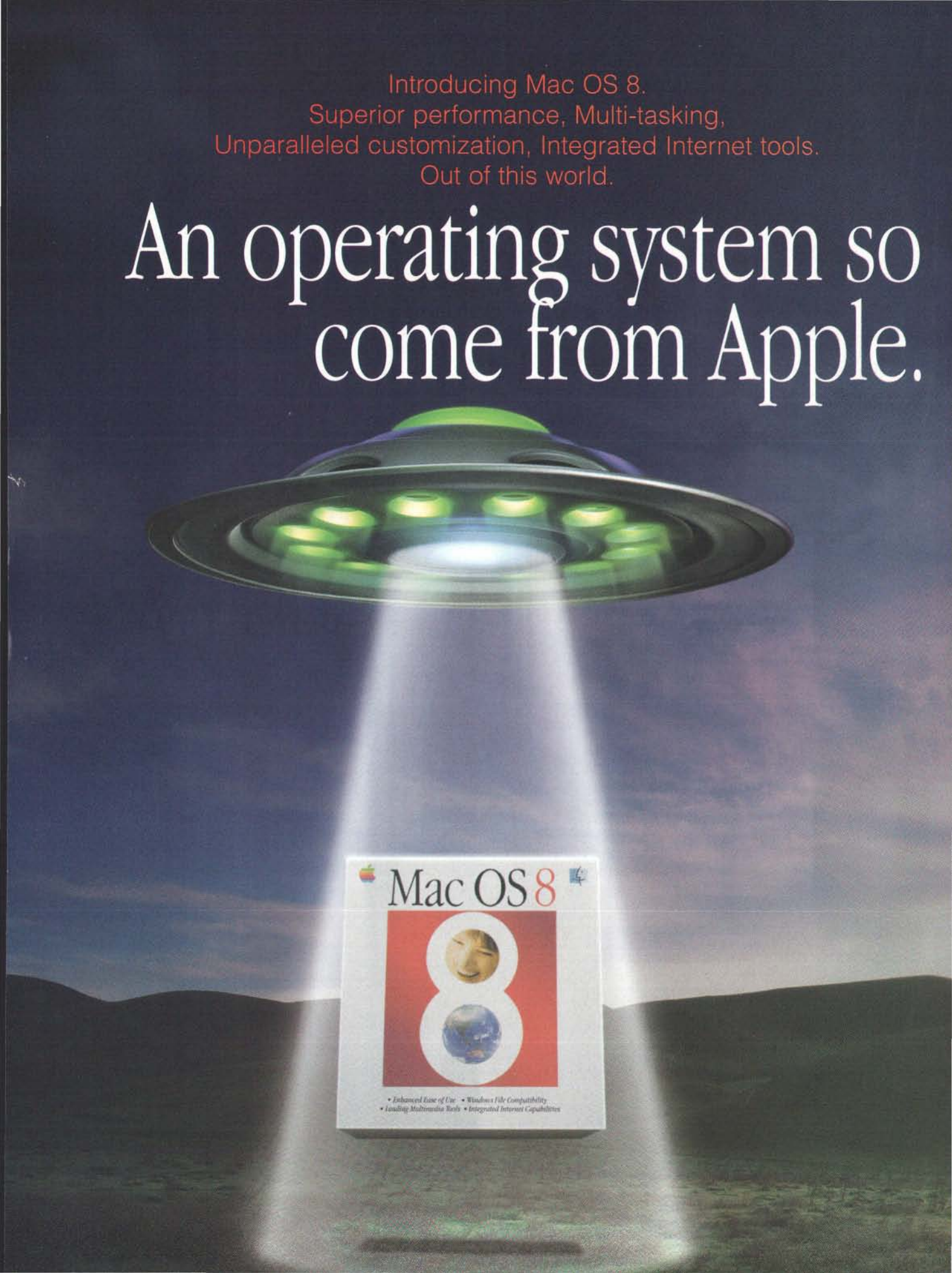

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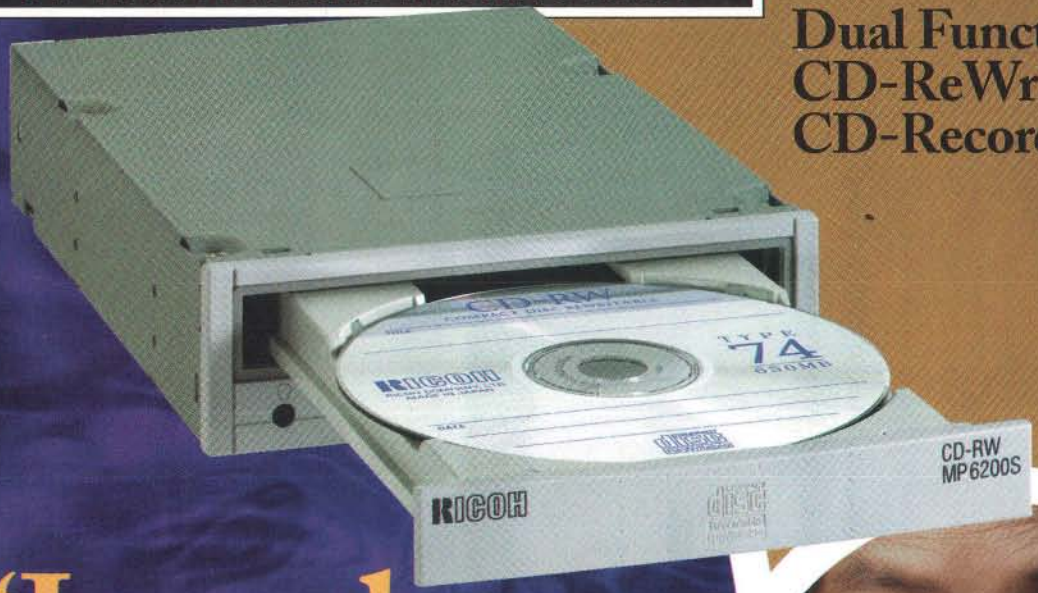

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Precocious PowerBookie

I'm an eighth-grade student whose school board is getting Apple eMates. At first glance, many of my peers were seduced by the cushy shape and "funky" look of the limited-function, $700 PDA-in-the-guise-of-a-laptop.

Well, they're in for a surprise, 'cause next year I'm gonna come to school with that awesome, color PowerBook 2400c that you reviewed ("The Incredible Shrinking PowerBook," July '97, page 28). Then I'll proverbially RAM it to those goofy eMates and wallow in the luxury of my decision.

Paul Brutscher, via the Internet

The Redesign Line

Excellent job with the redesign ("The Read Me File," July '97, page 19). The infobars at the top of the pages are a stroke of genius. I've always thought that *MacUser* was easy to navigate, but the changes your team made have transformed the publication into a highly effective road map for all things Macintosh. I'm not just a passive reader anymore — I've become an active *user* of the magazine: "Where was that article on Movie Cleaner Pro? Oh, there it is! And how do I find out more about the program? There's the Web-site address!"

Again, my compliments to your design team. They took a first-rate publication and made it even better.

James K. Boodley
BlackLab@memory.ithaca.ny.us

I just read your July issue with great delight. The layout and content are meaty and yet compact. As a subscriber to the four Mac mags and to several design mags, I must say you've topped them all.

Roseann Carcello, via the Internet

What particularly struck me about *MacUser*'s new design is how it has the quality of a Web site. The infobars are almost like hyperlinks where one can click for more information. I've watched with interest how people confront Web-page design.

Also, I'm a big fan of Petr van Blokland and I like Proforma a lot as a text face. But I think it looks a little light on your coated-stock pages.

Overall, let me offer my congratulations! Your new design is beautiful and is a strong step toward a new periodical aesthetic that combines the facility of electronic pages with that of print.

Cynthia Hollandsworth
73353.404@compuserve.com

Thanks for the input. Our new computer-to-plate printing process generated some unanticipated side effects, including the text font printing lighter than our production tests had indicated. We're in the process of making changes to address these issues. Stay tuned. — PP

Sluggish Exceleration

I enjoyed Henry Bortman's "What's Your DQ?" (July '97, page 21), but I'm afraid that the second task wasn't a trick question after all. To arrange an Excel bar chart in the same order as the data table from which it is created, one must perform the following steps:

Double-click on the bar chart; double-click on the y-axis of the chart to open the Format Axis dialog box; click on the Scale tab in the Format Axis dialog box; check the "Value (Y) Axis Crosses Between Categories," "Categories in Reverse Order," and "Value (Y) Axis Crosses at Maximum Category" boxes; close the dialog box; and throw rotten eggs at Bill Gates' house.

It took me only around a half an hour to figure this out. Identifying the asinine procedure above only further supports the point of your column.

Kenneth Brown, brownk1@home.com

Restraining Order

Your review of Stalker Software's CommuniGate package (July '97, page 54) was incomplete. The impatient tone of the

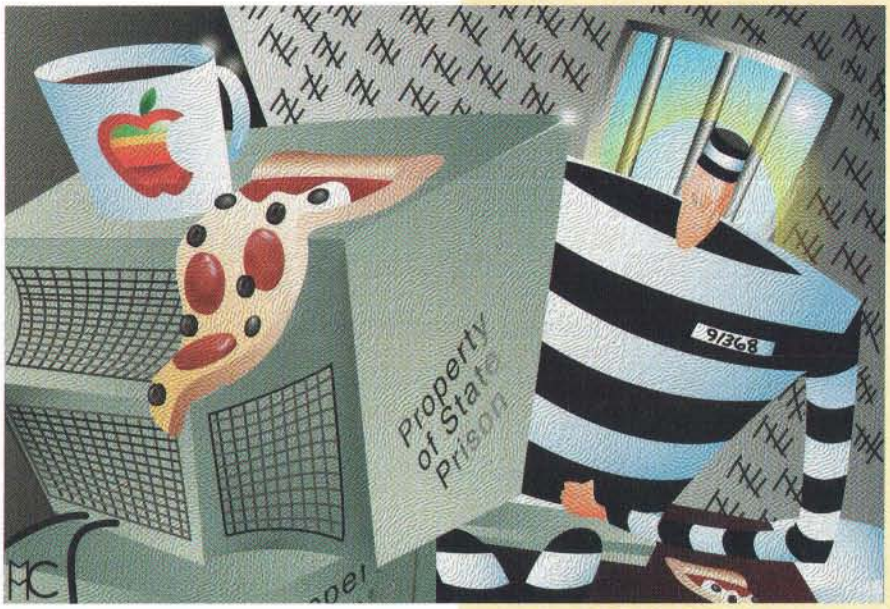


Illustration · Margaret McMullin

Open Folder

FIRST THERE WAS the Birdman of Alcatraz, the legendary inmate who developed a supposed passion for ornithology but whose unlikely blend of sensitivity and science may actually have been a guise in which the substance-abusing convict could procure alcohol and other forbidden pharmaceuticals. We may never know his true intentions. But we do know those of James E. Crow Jr., our so-called Macman of Florida's John E. Polk Correctional Facility. James sent us a letter seeking employment at MacUser Labs, which he hails as "that wonderful place where you get paid to play with new machines." With tongue firmly in cheek, James offered up the following qualifications: "I have key technical expertise (i.e., I make excellent coffee and can warm pizzas in the microwave)."

We're on to you, James. You plan to practice your wily culinary charms on our overworked and underfed Labs staff and thereby score access to some hot bits of technology. Well, technology has its dark side. There are plenty of shady characters out there who aren't going to serve you on your path to redemption. Witness Tom Brisson, who — with sociopathic glee — states that "the Web is mostly crap, and God bless it. We need the cover of 'doing business' to use the Net for its real purpose: screwing off." What kind of people would we be, James, if we appeared willing to expose you to the anarchic influence of deviants like Tom? Instead, like the macrobreweries (i.e., with tongue firmly in cheek), we're going to urge restraint in the use of our favorite products.

Feedback

article gives me the impression that the reviewer didn't spend much time with the package.

Although your two main complaints — difficult documentation and no installer — are valid, CommuniGate's powerful capabilities far outweigh these shortcomings. Stalker has truly created a clean-running background communications server that handles pagers, faxes, voice-mail, e-mail lists, and Internet e-mail via UUCP, IMAP, POP, or SMTP. Compared to other e-mail systems available, CommuniGate is really very easy to administer. Stalker is constantly upgrading the package with new modules and releasing bug fixes. I have consistently received first-rate technical support from the company, and I've been impressed with Stalker's willingness to add features based on my requests.

The biggest point you neglect to mention is that CommuniGate is *free* for a five-user LAN license. You may evaluate the POP and SMTP modules and any others for free too. I evaluated this software for several months and did not pay for it until I was satisfied that it completely met my needs. Throughout the evaluation period, the tech support was free and top-notch.

David Young, ccpa@capecod.net

Illustrative Metaphoria

A face-lift ("MacUser QuickStart: Adobe Illustrator 7.0," July '97, page 60) is no reason to change a software package's version number. Your review didn't mention any improvements either in the dismal graphing portion of Illustrator or in its type handling. The weak typographic tools should have been at the top of the needs-to-be-improved laundry list.

Minor things such as a new interface or RGB-color support deserve a .1 version increase. Slapping a Wonderbra on an existing product is not my idea of satisfactory progress. An upgrade is supposed to be a step — not a stumble — in the right direction.

Michael Wagner, mwagner@prizmpharm.com

DVD Fact and Fiction

Thank you for the well-rounded article on DVD-ROM ("DVD Comes to the Mac," July '97, page 74). Unfortunately, there are a few points that beg to be corrected or clarified.

You imply that SCSI DVD-ROM drives may never be available. Although it's true that E-IDE/ATAPI drives appeared first, at least one vendor — Pioneer — has announced a SCSI model in tandem with its IDE model.

The article states that DVD-ROM drives will transfer data from CD-ROMs at only 6x speed. There have already been announcements of DVD-ROM drives that read data from CD-ROMs at 25x speed. Given the escalating demand for speed, even this high rate will soon be surpassed.

Another supposed drawback is that current DVD-ROM drives will not be compatible with the yet-to-be-finalized DVD-Audio standard. Since the DVD-Audio format is simply an application of DVD-ROM, current DVD-ROM drives will be able to read DVD-Audio discs. The only potential drawbacks are lack of the proper audio decoder (which is not a function of the drive) or a new copy-protection scheme that might not allow the drive to read discs that use such a scheme.

You say that first-generation DVD-ROM drives can't read CD-Rs. This is mostly true, but it is misleading. Sony, Philips, and others promise that their first-generation DVD-ROM drives will read CD-Rs. Also, it's quite likely that other second- and even third-generation DVD-ROM drives will still not read CD-Rs. Prospective buyers should specifically check for this feature if it's important to them.

Thank you again for your coverage of this new technology that will profoundly affect Macintosh computers in the next few years.

Jim Taylor, jhtaylor@videodiscovery.com

Cookies: Get on the Cooling Rack

I can't quite share your tolerance of cookies ("Big Brother Meets the Cookie Monster," July '97, page 96). If a Webmaster can put the IP number of my computer into his database, doesn't this make me liable to get a barrage of junk e-mail? Can't that Webmaster sell his database to others who will add to the barrage? I should have the right to enjoy complete anonymity when I visit a Web site.

Anonymous, via the Internet

You've got a couple of misconceptions. First, Webmasters can learn the IP number of your computer without ever using a cookie — that's information your Web browser sends automatically. Second, IP addresses aren't e-mail addresses — nobody will get your e-mail address unless you give it to them. If you do, then all bets are off. — JS

You wrote that "cookies can be read only by the Web site that sent them." But according to my research, cookies can be read by the *server*, which may sponsor numerous Web sites. This means that a server can track a user's movements on all of its sites and has the power to cross-reference any information to come up with a more detailed dossier of a user. Although I agree that cookies are a useful tool, powerful servers with many Web sites may know more about a user than that user might suspect. I think servers should gain permission from users before they set a cookie, and users should be told what information is being taken and why. Users should also have the option of changing incorrect information or simply refusing a cookie. In a world where information is quickly becoming a form of currency, full disclosure should be an option for users and a requirement for servers.

Sarah Lawrence
lawrence@plainfield.bypass.com

You've hit the nail on the head. There are *privacy issues regarding cookies (and Web browsing in general). It's just that they've been lost amid the misinformation and paranoia of the Great Cookie Scare. — JS*

He's a Geek, and He Plays One on TV

I'm one of the Geeks from the Sprint commercial mentioned in Andy Ihnatko's "No Cure for Commerce" (July '97, page 166). I'm not speaking metaphorically. I'm one of the "morons they hired to play the Geeks." I may be overweight, have no social skills, and have terrible fashion sense, but I'm here to tell you I washed that day! And I thought you'd like to know that at least one of the nerds in that commercial (me) has been an avid Mac user for years.

Also, you might find it mildly interesting that in the commercial, the PC displays on the workbenches in the clubhouse were hooked up to Power Macs running off-camera.

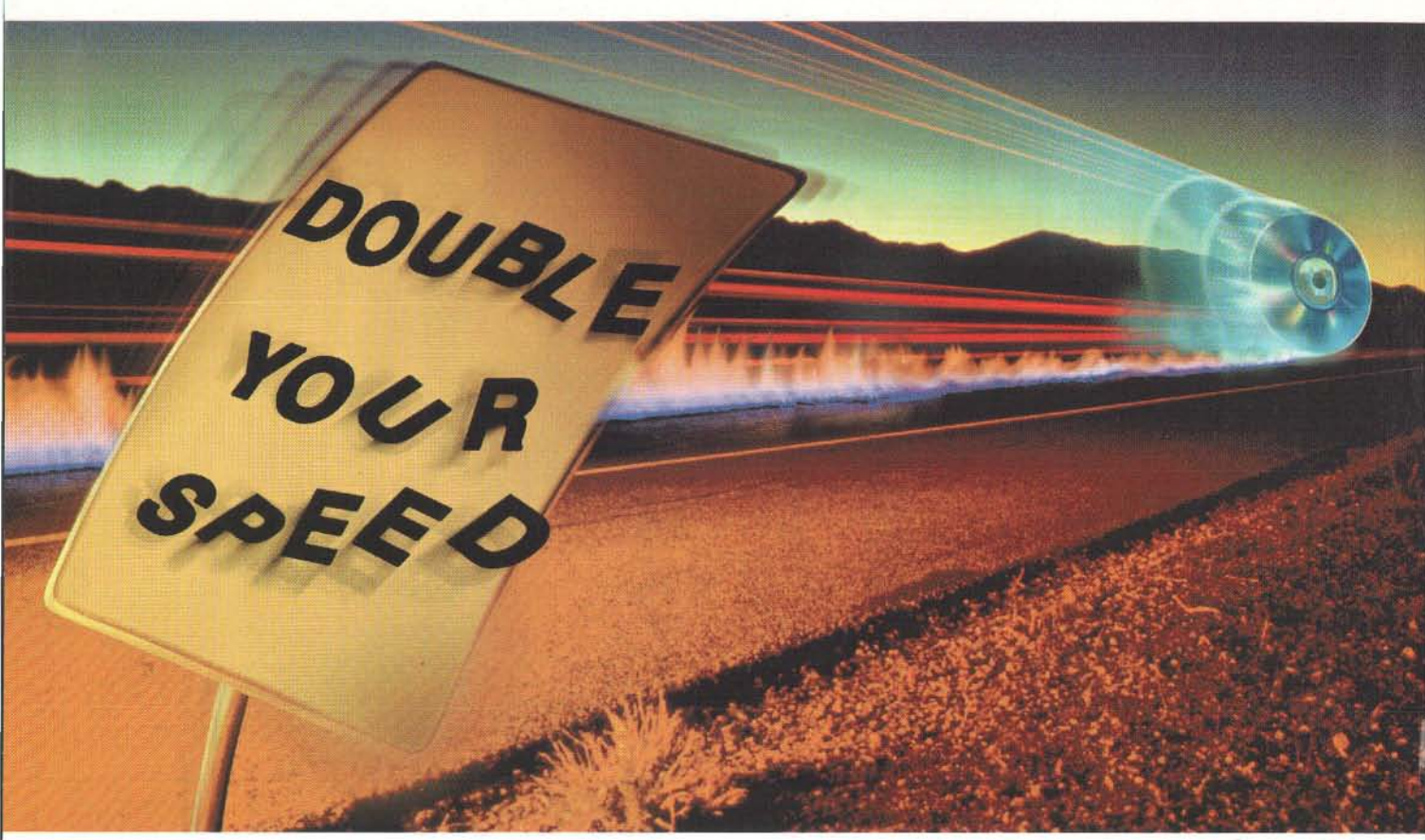
Despite your unprovoked attack on me, I remain a longtime fan of yours.

Larry Spinak, spinak@primenet.com

Corrections

The correct name of the designer of the Proforma typeface ("The Read Me File," July '97, page 19) is Petr van Blokland.

The Kodak DC25 digital camera ("Low-Cost Cameras, Low-Quality Images," July '97, page 36) does have a feature that lets you vary the brightness of the built-in LCD.



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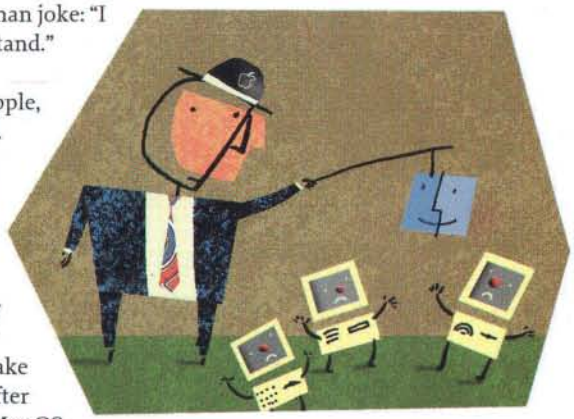
Clones Forever
Tell Apple you want them to continue with a fair licensing program by signing our petition at www.macuser.com/petition

By Pamela Pfiffner
pam@macuser.com

The Joke's on Us

Apple needs to figure out if it's a systems company or a platform company — fast

IT SOUNDS LIKE A Henny Youngman joke: "I love the Mac; it's Apple I can't stand." Now before you start yelling, "Whaddaya mean?! Without Apple, there *is* no Mac!" let me explain. The Macintosh is a computing platform; Apple sees itself as a systems company. And that's the problem — Apple refuses to make the success of the Macintosh platform its primary focus.



Harsh words? Perhaps, but take its licensing program. Please. After helping launch a now vibrant Mac OS-compatible market, Apple is in the midst of renegotiating contracts with its licensees. If you're under the impression that this high-level haggling is purely behind-the-scenes stuff, you're wrong. These negotiations speak volumes about what's wrong with Apple's current attitude toward the Macintosh and the Mac OS.

I'd Rather Be in Philadelphia

The story thus far: Apple is miffed that sales of Mac OS compatibles have eaten away at its own sales — taking, by some accounts, 30 percent of its business (see Mac Stat in this issue). It seems Apple's licensees are luring away Mac buyers from the old rainbow logo by producing high-performance, low-cost machines that offer compelling bundles. What nerve!

To try to remedy this situation, Apple reportedly decided to hike licensing fees by as much as 400 percent. That's where negotiations *started;* no wonder the licensees don't consider these talks a laughing matter.

Now let me make one thing clear: Apple does need a sensible licensing plan that allows it to make money, and I see no way around licensees having to pay more, although 4x is a bit steep. But Apple's current proposal ties that fee to processor speed, with the highest premiums being paid on the fastest CPUs. In other words, the faster the chip, the higher the licensing fee, and the more you'll have to pay for high-speed systems unless you buy them from Apple.

Take This Mac — Please?

Imposing higher licensing fees is only one way in which Apple is doing its best to slow the pace of Macintosh innovation. It is also reneging on its promise not to require certification of machines built on the Common Hardware Reference Platform (CHRP).

For a long time, Apple has been telling its licensees that CHRP — in which Mac OS systems can be crafted from industry-standard components — would free them from the constraints imposed by certification. Apple's current licensing agreement requires that all Mac OS-compatible designs undergo a rigorous Apple certification process. This certification is a good thing: It guarantees that the Mac OS system you buy works like, well, a Mac.

The disadvantage of certification is that Apple can decide not to accept a machine — say, a certain clone maker's 300-MHz machine that was supposed to have shipped last March — for certification if it feels the product might cut into its own profits too severely. Now, with CHRP systems finally visible on the horizon, Apple is backtracking, insisting that its stamp of approval is still required for any Mac OS system. This guarantees that Apple can continue to play sole gatekeeper on the Mac platform.

It feels like 1984 all over again, only without the special Torx screwdrivers. For Apple, licensing is a scheme to enhance its own revenue stream, not a way to enhance the success of the Macintosh platform. Ironic, isn't it, that Steve Jobs, the man who insisted that the Mac remain a closed system, is back at Apple and publicly supporting this licensing plan?

Did You Hear the One About . . .

There are reports from Cupertino and elsewhere that Apple is softening its stance and offering an olive branch to its licensing partners. Well, I'm glad Apple's coming around. Too bad Motorola had to suspend talks and a slew of negative stories had to see print to get Apple to moderate its position.

But there's still that bigger issue: Apple needs to realize, once and for all, that its fortunes are tied to the success of the Macintosh platform, not just the sales of Macintosh hardware. A good place to start is developing a thoughtful licensing plan that doesn't scuttle or punish innovation. After all, the enemy here isn't Apple's licensees — it's Compaq, Dell, Gateway, and the rest of Billy's boys. Apple and its licensing partners must stand together — or fall separately.

That's why you need to get involved. If you believe in an open Macintosh platform, sign our petition in support of a fair licensing program. We'll send it along to Apple to let the company know that we all benefit from a healthy Mac platform. You'll find our petition at www.macuser.com/petition.

Who knows? With your help, maybe Apple will even allow licensees to use the word *Macintosh* on their products.

Illustration · James Yang

Jack said, "I am sorry, Don.
Your Java™ is not 100% Pure Java.™
So your data is not safe.
Anyone can get to it. Anyone."

"Oh, no!" said Don.
"What about my trade secrets?"

"They are not so secret
anymore," said Jack.

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* CacheDoubler upgrade will work on all existing S900 machines, available in Fall '97.

CIRCLE 141 ON READER SERVICE CARD

Spin Doctors
For some selected letters from Power's customers (selected by Power, that is), click on PowerUsers at www.powercc.com/cgi-bin/WebObjects/Powerweb

The Power Underground
If you want to hear about Power from a less custom-tailored source, check out the PowerWatch site at www.powerwatch.com

By Henry Bortman
henry@macuser.com

The Macintosh Crucible

Got a complaint or compliment about your Mac-purchasing experience? I'm the guy to tell it to.

I'VE GOT A NEW ROLE at *MacUser* — CPU Czar (although, as I've told my coworkers, I prefer the title Czarina — it comes with a better wardrobe). It's now officially my job to keep tabs on what Apple and the Mac-clone vendors are up to, to spearhead *MacUser*'s process of evaluating Mac OS systems, and to make sure that our online CPU Report Cards and monthly in-print CPU Short Lists keep pace with the fast-changing Mac-systems market.

So it was with great interest that I read a letter the other day from Joel Kocher, president of Power Computing. It's only fair to point out that it wasn't exactly a personal note. I think Joel sent this missive to about a hundred thousand other people too.

At any rate, Joel informed me that "after 17 years in this business, I've learned that you have two choices: take care of the customer or take a hike." That was refreshing. He also admitted that Power had had "growing pains." But he was working on fixing the problem, he assured me.

Joel proceeded to list the programs he had put in place to overcome Power's difficulties. "We've tripled our build-to-order production capacity," he said. "We've begun shipping our systems within 48 hours of ordering," he added. He concluded by informing me that the company had tripled its customer-service and -support staff, an improvement that would result in "a two-minute waiting time for tech support and zero waiting time for sales and customer service!"

This was all welcome news.

Extra Crispy

But I've also been privy to some other letters about Power Computing. Letters from *MacUser* readers. Letters that aren't quite so laudatory about the Power experience.

A choice example, dated just two weeks earlier than Joel's letter, complained: "I have had a long series of problems with Power Computing, beginning with two PowerBase 180s that didn't work — even after ten hours of hands-on attempts by Berkeley Mac Users Group (BMUG) technicians [to fix them]. [Power] finally offered me a better machine for the cost of the PowerBase 180, a PowerCenter 150. But then the company sent the wrong computer .... Now that it has finally gotten the computer right, it hasn't acknowledged that I returned two computers and is billing me for three."

Now don't misinterpret my motives. My purpose here, despite appearances, is not to beat up on Power Computing. I know Power stuck its neck out when it became the first Mac cloner. I know the company takes a lot of the arrows because it's still the leading clone maker.

Which is why I use Power merely by way of example. *MacUser* routinely gets letters complaining about Apple, UMAX, Motorola, and other Mac-system vendors as well. And, on the plus side, we additionally get letters from customers praising these vendors and their products.

So when I get a letter from a company assuring me (and a hundred thousand other people) that its problems are a thing of the past, my ears perk up. Like Mulder, I want to believe. But like Sculley, I need proof.

Trial by Fire

So here's what we're going to do. *MacUser* hereby establishes itself, by way of this column, as a clearinghouse for your CPU feedback. In fact, we're setting up a special e-mail address just for that purpose: cpufeedback@macuser.com. Have a horror story about waiting for weeks to receive a computer, or a delightful yarn about a system that arrived on your doorstep just minutes after you placed your order? cpufeedback@macuser.com. Got a tale of woe about DOA equipment that took 17 phone calls and three rounds of FedEx cross shipments to straighten out, or a complimentary anecdote about a system that has worked perfectly from the moment you plugged it in? cpufeedback@macuser.com.

And what will we do with your comments? For one thing, we'll keep score. We'll tally up the good and the bad. And we'll report back our findings to you, to help you make more-informed buying decisions.

And we'll go a step further: We'll be your advocates. We'll forward your mail to the appropriate authorities at Apple, APS, Motorola, Power Computing, PowerTools, and UMAX. And we'll keep up the pressure on those vendors who you tell us aren't meeting your needs.

So bring on the e-mail. That address again: cpufeedback@macuser.com. I promise to read each and every missive personally.

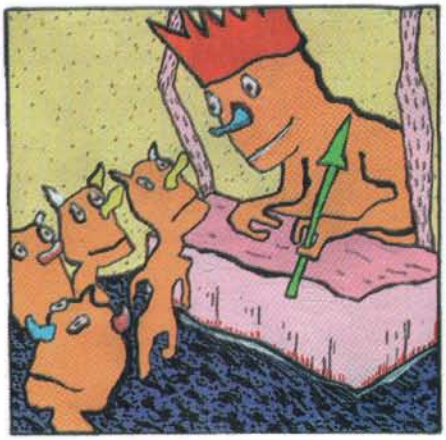


Illustration · Sacha Eckes

AppleMasters
Want to learn more about high-profile users of the Macintosh? Check out the AppleMasters site at www.applemasters.apple.com

I'm Batman
For a more in-depth profile of the Mac's involvement in the making of *Batman and Robin*, read our online story at www.macuser.com/mu_0997/batman

Apple's New Clone Order

Apple dodges bullet in delicate Mac OS licensing talks

In the renegotiation of Mac OS licensing agreements, huge fee hikes, a draconian certification process, and questions about whether retail Mac OS releases would support CHRP hardware put Apple at odds with its own licensees.

Things got so bad that Motorola walked out of negotiations, declaring itself at an "impasse" with Apple. For a few days, it looked like Mac OS licensing was about to experience a meltdown.

Crimes and Misdemeanors

To understand how things got to this point, one need only look at Apple's original proposal for a new licensing scheme. Currently, licensees pay between $80 and $200 per Mac OS license. Under the new plan, those fees would have skyrocketed to between $200 and $1,000, depending on the speed of the system's processor.

But that wasn't all. Apple also wanted to continue approving clone designs before they could ship, even those based on the common hardware reference platform (CHRP), which had previously been billed as an open platform. The certification process, which was ostensibly to ensure compatibility, would have given Apple early access to designs of potential competitors and the ability to hold up those designs.

And then there was the question of support for CHRP systems in the retail version of the Mac OS. Sometime next

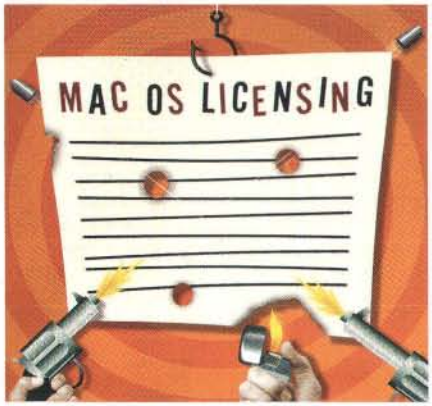


Illustration · John Ueland

year, the Mac OS will no longer require a hardware ROM to be installed in a computer for it to run. Instead, the OS will load ROM code into RAM, with all changes required to run a new OS version being uploaded with the code (each new iteration of the Mac OS requires changes in ROM code to operate).

Apple initially didn't want to include the CHRP version of ROM code with the retail Mac OS, because it would have enabled clone vendors to avoid paying the high OS licensing fees by either bundling the much less expensive retail package or simply telling buyers to go out and get it themselves. Unfortunately, if Apple didn't include the CHRP ROM code in its Mac OS releases, CHRP buyers would have been forced to go back to the clone vendor to get a ROM-code updater before they could install a new version of the Mac OS on their CHRP machines.

A Return to Sanity

It was all about to unravel, when Apple CEO Gil Amelio and CFO Fred Anderson stepped in, taking a more conciliatory position on the licensing controversy.

Under Apple's latest proposal, licensing fees will not change dramatically from current levels. Although the fastest chips will still earn Apple a premium, the price will be a fraction of the original proposal.

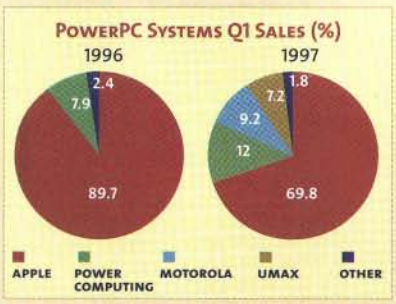
Perhaps more important, Apple has agreed to a "black box" certification process, in which licensees will have the option of delivering machines in sealed cases for testing. Further, certification will be a matter of getting a pass/fail result from well-documented compatibility tests, not a matter of opinion.

And Apple has reportedly agreed to support both CHRP and non-CHRP systems in all future Mac OS releases, enabling licensees and their customers to go the shrink-wrap route, should Apple ever decide to hike licensing fees. The company has even put PowerBook licensing on the table.

At press time, an agreement had not been reached, with no guarantee that one was imminent. But sources on both sides detected "a newfound optimism" that an agreement will be reached. · *Andrew Gore*

Mac Stat · *Andrew Gore*

Clone Vendors Gain on Apple



Source: Dataquest. **Note:** "Other" category includes shipments of non-Mac OS-based PowerPC systems.

Live Shot · *Andrew Gore*

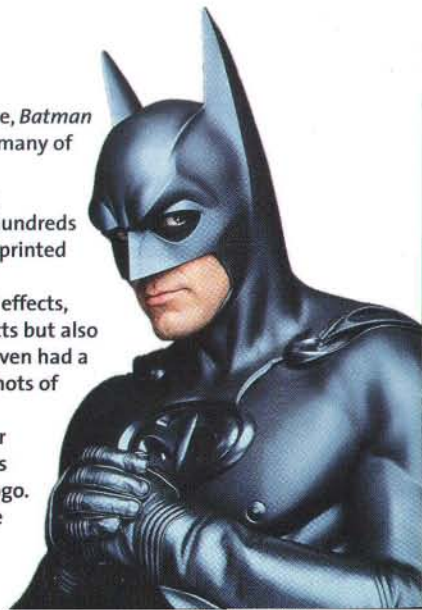
Bat, Mac, and Robin

When the Dark Knight returns in the fourth Batman movie, *Batman and Robin*, he'll have the Macintosh to thank for creating many of his wonderful toys.

The Mac was pervasive throughout the latest Batman production. Macs were used to design some 90 sets and hundreds of props — including Poison Ivy's lair, consisting of a Mac-printed tile mosaic covering some 14,000 square feet.

When it came to creating Batman 4's stunning special effects, the Mac was used not just to design some 350 visual effects but also to do budgeting, tracking, and communication. The Mac even had a hand in the makeup, managing a database of some 220 shots of how characters should look in each scene.

The Mac was also used in sound-effects production, for creating animated storyboards, for building the DC Comics Batman-style-guide CD-ROM, and for doing the movie's logo. Apple systems even showed up on camera: Both an eMate and a 20th Anniversary Macintosh were used as props.



WebView/Livescope
Palomar Media
Vancouver, BC, Canada
888-725-6627 or 604-684-3300
www.palo.com

Crack a Mac, Make a Buck
To get more info on the two latest contests to topple the Mac from its secure-server throne, check out hack-a-mac.global.de/ and www.vanhacking.com

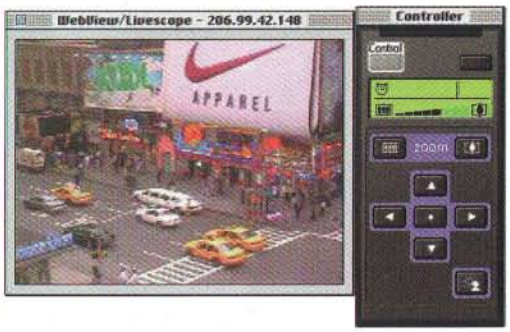
Between the Lines
A complete transcript of this interview is at www.macuser.com/onlinecol/stone.html .

Future Tech · *Rik Myslewski*

A Web View to a Thrill

WebCams are deadly dull — passive, motionless, mostly monochrome. Sure, it was once fun to check out WebCam Central (www.cris.com/~jdholley/wcc/index.shtml), but how many coffeepots, skylines, and geek-at-his-desk images can you view before voyeurism decays into ennui?

Palomar Media, a small Web-site-design firm based in Vancouver, British Columbia, is out to reinvent — and reinvigorate — the WebCam. Using technology from Canon, Palomar is offering full-motion, full-color, real-time Web video. That's impressive in itself, but here's the kicker: You, the viewer, can control the camera: point it, zoom it, even adjust for backlighting — all in real time.



Want to set up one of these more active WebCams? Just pay Palomar $8,000, and it'll provide a Canon VC-C1 digital-video camera, a Pentium-based server, and Canon's WebView/Livescope software. Point the camera at whatever event or location you want to promote and hook the server up to an ISDN-or-faster Internet connection, and viewers of your Web page — after downloading the appropriate Windows or Mac plug-in (www.x-zone.canon.co.jp/WebView-E/) — can pan, zoom, and tilt to their hearts' content, using the WebView/Livescope software camera controller.

Although the system is still in beta, there are already a dozen or more noncommercial WebView/Livescope sites online — including (as shown) Times Square in New York City. And possible future applications are unlimited: Paul Tagliabue could deploy a few dozen cameras at the next Super Bowl. Donald Trump could artfully distribute a few to show off the baccarat tables and banquet facilities of the Taj Mahal. Malls, art galleries, bookstores, gardens — with WebView/Livescope, Web *browsing* takes on a whole new meaning.

Adobe RIPs PostScript a New Price Point and Speed

WITHOUT POSTSCRIPT, the Mac probably wouldn't have been more than a footnote in a technological history dominated by Bill Gates' progeny. But, for many business documents, PostScript can be overkill.

QuickDraw-based printing, which is notorious for producing ugly results, has been about the only real alternative to PostScript. Until PrintGear, that is. Two years after it arrived in the Windows market, Adobe's less filling, better-tasting version of PostScript is finally being released for the Mac.

PrintGear is a combination of Mac-based software and printer hardware that can quickly process files, producing sharp results. By using a compact instruction set containing the most-prevalent imaging objects in business documents (complex images such as EPS files are printed as bitmaps), PrintGear can achieve surprisingly fast print speeds: With a printer engine rated at 12 pages per minute, Adobe says, PrintGear can exceed 10 ppm, whereas PostScript on a typical 12-ppm printer printing the same document would likely give you print rates closer to 4 ppm.

Although the speed will likely please many, it's the price tag that will really satisfy. Because the cost of PrintGear's 60-MHz controller is so low — about $37, compared to a couple of hundred dollars for a PostScript controller — the prices of PrintGear printers should be several hundred dollars less than their PostScript counterparts'.

Hoping PrintGear will boost its share of the Mac market, as it did in the Wintel space, NEC recently released the $799 SuperScript 1260 for the Mac. (Texas Instruments developed a PrintGear-based printer for the Macintosh in 1995 but never shipped it.) NEC's share of the Wintel printer market shot up from .3 percent to over 12 percent shortly after the company shipped its PrintGear printer for Windows. · *Roman Loyola*

In Brief

Mac Chic, Now Available Got $7,500 burning a hole in your pocket? Then you too can own the latest thing in Digirati Techno-style: the 20th Anniversary Macintosh. Just contact your local Apple Specialist to place your order for this 250-MHz beauty. For a complete list of Apple Specialists, go to twentiethanniversary.apple.com.

HackMac Returns After the Mac proved its invulnerability in a Swedish hackers contest (see "In Brief," July '97, page 23), Canada-based VirTech Communications decided to sponsor its own crack-a-Mac contest. The goal is simple — just snatch a credit-card number and change a phrase on a target Web server, and win $7,500. Not to be outdone, Apple Europe is sponsoring the Global Access Hack-a-Mac contest. Just modify the contents of the "Try Me" page on the Apple server, and win a PowerBook 3400c.

The Happy Mac Meal Deal UMAX recently broke the $1K barrier, with its new C500 family of Mac clones. The C500LT/180, just $949, comes with a 180-MHz 603e, 16 MB of RAM, a 256K Level 2 cache, a CD-ROM drive, and a 1.2-GB hard drive. And, yes, UMAX can supersize that for you .... · *Andrew Gore*

Between the Lines

True Believer

"NeXT had great technology that never got a hold in the marketplace — maybe a total of 80,000 seats were ever sold. The reality is that with the developer release of Rhapsody this summer, that [installed base] will at least double in one day."

— Andrew Stone, *CEO of Stone Design, an OpenStep developer who can't wait to move his drawing application to Rhapsody*

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www.bigbang.com

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Grahl Industries, Coldwater, MI
517-279-8011

Newton Falls from Apple's Tree

Spin-off to champion all things Newton

Apple's success with spin-offs has been spotty at best. First there was Claris, the commercial-software company that was ultimately sucked back into Apple weeks before a planned public offering. Then there were Taligent and Kaleida, both of which became extinct after failing to find an ecological niche outside the Apple biosphere. Now, there's Newton Inc.

Newton Inc.

The Newton spin-off, a wholly owned subsidiary of Apple, will continue to develop all things Newton as well as sell the MessagePad 2000 (MP2K). Apple will remain the primary OEM of the eMate 300.

According to Sandy Benett, chief operating officer of the new company, it was deemed necessary to spin the Newton group out in order for the platform to reach its potential. "The Apple name was holding us back in certain markets," Benett says.

Newton Inc. will focus on three corporate markets: mobile professionals, health care, and field service. The MP2K's no-compromise performance in a 1.5-pound package has had great appeal in these markets, despite the computer's over-$1,000 price tag.

Benett says he hopes Newton Inc. will be able to turn a profit within a year, based on the strength of these markets and on strong sales of the MP2K. The company will continue to explore developing smaller-form-factor Newtons and eMate-like Newtons geared more to mobile professionals, although Benett was not prepared to make any commitments on shipping these designs.

The ultimate goal? To take the company public, a goal that Benett believes is realistic now that Newton Inc. can start courting investors who might otherwise have been scared off by Apple's baggage. · *Andrew Gore*

Big Bang Theory

Although it may be little more than a daydream to be paid to read most advertising, in the never-never land that is the Internet, it's about to become a reality.

Starting this summer, if you register with Big Bang Media, the company will pay you 1¢ for each Web page you visit that hosts a Big Bang advertiser's banner, and 5¢ every time you actually click on a Big Bang ad. You can redeem your monthly earnings as a credit against an Internet-service-provider bill, as frequent-flier miles, or as a donation to your favorite charity. (If your mouse finger is getting itchy, be forewarned — the cap is 1,000 miles or $20 a month.) Web sites that host the ads will also get a financial incentive.

The firm promises to do more than just *pay* you for clicking on ads — something that, incredibly, another firm, called CyberGold (www.cybergold.com), already does. Big Bang promises to match the ads you see to your interests. When you register, you fill out a confidential survey, and a cookie with an ID number is placed in your browser. Big Bang's database uses your cookie to serve up ads for you.

At press time, the service was still being tested (see graphic above) but the company said a dozen advertisers had already signed up. One of Big Bang's aims is to woo consumer advertisers to the Web. Advertisers shelled out about $300 million on online advertising in 1996 — a pittance compared to the $173 billion that's spent on all advertising. Big dollars are at stake, but it remains to be seen whether Big Bang will be a fiscal bang or bust. · *Scholle Sawyer*

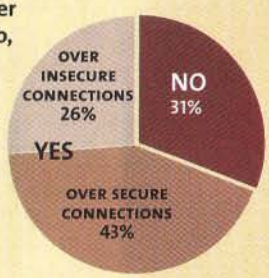
Online

Exclusive Utility of the Month This month's Exclusive Utility, UltraLaunch, from JEM Software, allows users to set hot keys and to schedule times and days for launching any application or opening any document. UltraLaunch is part of the commercial Online Army Knife package, but it's available free, from July 31 until August 31, exclusively from ZDNet Mac Download on the Web (www.macdownload.com) and on CompuServe (GO ZMC:MACUSER). In addition, anyone who downloads UltraLaunch from ZDNet can purchase Online Army Knife at a discount — see the documentation for more info.

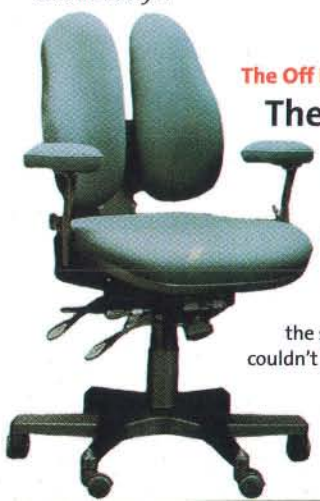
Feed Me So Kaleidoscope isn't enough to satisfy your customization cravings? You can feed your need with Window Monkey, a control panel that places patterns in any open Finder window. But don't stop there. Another utility, Aurora, lets you brighten up your menu bar with all the colors of the rainbow. Both utilities are available at www.macdownload.com. · *Philip W. Dyer*

Online Poll

Q. Have you bought anything over the Net? If so, did you use a secure connection?



To vote in the latest *MacUser* online poll, go to www.zdnet.com/mac/opinion.html.



The Off Beat · *Nancy Peterson*

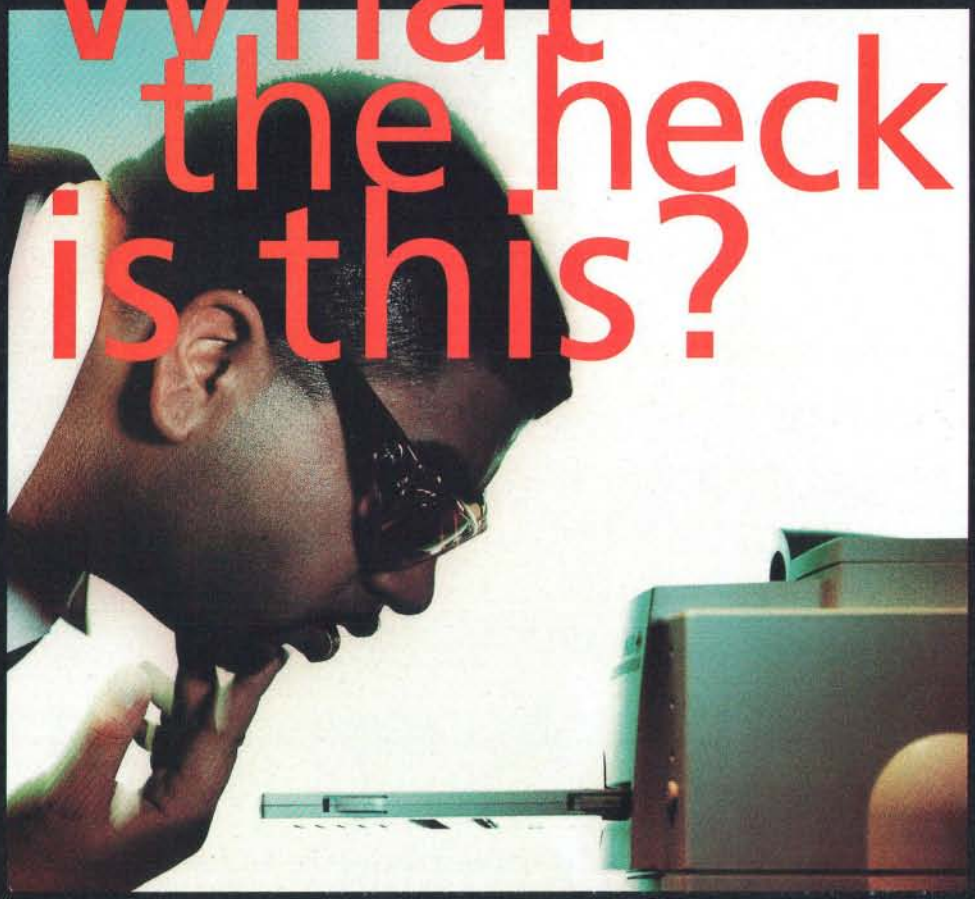
The Spine Who Loved Me

Computer work is dangerous. You have to dodge rays from your monitor, shield your eyes from glare, hold your wrist at just the right angle, and be ever aware of the spying eyes of others who would expose you for playing Duke Nukem during work hours.

At least your back will be able to relax if you have an ergonomic chair such as this Hugger Duo Back Chair. The split cushions are designed to give your back support and reduce strain on the spine. They're also angled to help enforce a healthy posture. Even Q couldn't have done it better.

The price ranges from $479 to over $1,200, depending on selected features, such as the fabric, the height of the seat back, and extra parts.

What the heck is this?



A DuoScan,® they tell you. A desktop scanner with two loading areas? A two-bed scanner? Yes, they say. So you can load transparencies while you scan reflective art. And with a dedicated bed for each, you can get better scans from both. Then you look at the dynamic range. And you look at the resolution. And the speed. And then you know exactly what it is. It's something that's going to make your life a lot easier.

MacUser AWARDS Editors' Choice 1996 Finalist

The new Agfa DuoScan with TwinPlate™ Technology. Exclusive dual scanning bed design for increased accuracy and productivity. 36-bit scanning of up to legal size for reflective, letter size for transmissive. Dynamic range: 3.3D. Resolution: 2000 X 1000 ppi. Line time: 7.7 ms/line, full color. Previews in under 10 seconds. Batch slide holders optional.

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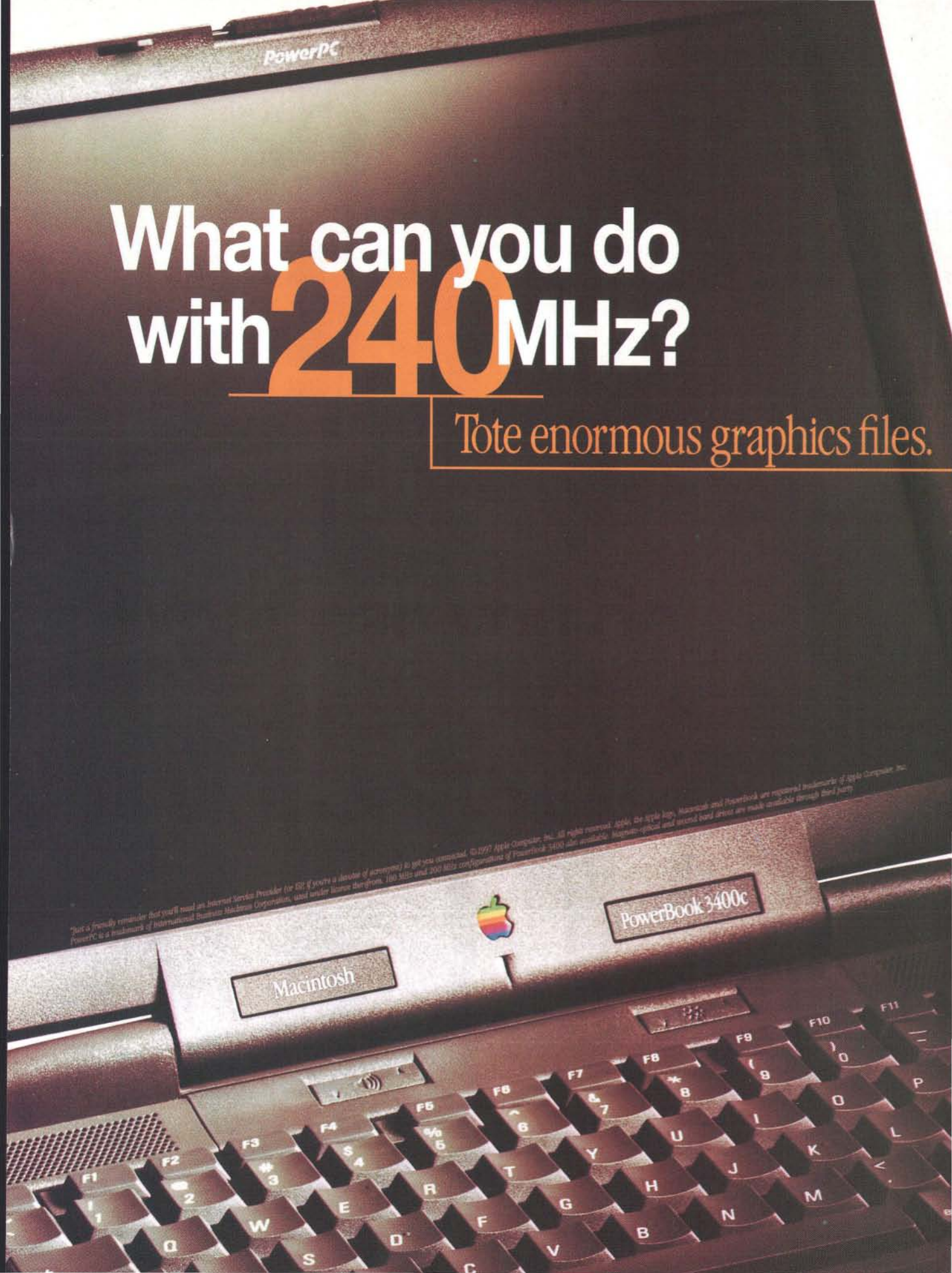
WHAT DO YOU SEE?

AGFA Agfa

The complete picture.

CIRCLE 169 ON READER SERVICE CARD


PowerPC
What can you do with 240 MHz?
Tote enormous graphics files.
PowerBook 3400c
Macintosh

Here are even more ways to do more. Send e-mail, surf the web® and play CD-ROMs with our best-selling PowerBook 1400. Or, if you want to do more without carrying more, the new PowerBook 2400c packs 180 MHz into just over four pounds.

Incite rubbernecking.

Run your own in-flight movie.

We didn't build the world's fastest laptop just to show off. But that's not to say you can't. Among its numerous talents, the PowerBook® 3400 is the ideal laptop for presentations. Its awesome speed means faster, more beautiful graphics, and its 12.1-inch diagonal screen is the perfect canvas to display your genius for persuasion.

But don't let the 3400's blinding speed blind you to its other features. Like its hot-swappable expansion bay. It lets you add all manner of drives, whether floppy, magneto-optical, CD-ROM or a second hard drive. All without putting your computer to sleep. To keep you connected, there are also built-in Ethernet/33.6 Kbps modem capabilities.

At the risk of sounding immodest, there's no end to what you can do with the new PowerBook 3400. To learn more, visit www.powerbook.apple.com. Or call 800-538-9696 for the name of the Apple reseller nearest you.

First Looks

PhotoVista 1.0
Live Picture, Scotts Valley, CA
800-724-7900 or 408-438-9610
www.livepicture.com

YoYo Professional
Big Island, Mountain View, CA
800-788-7751 or 415-237-0350
www.big-island.com

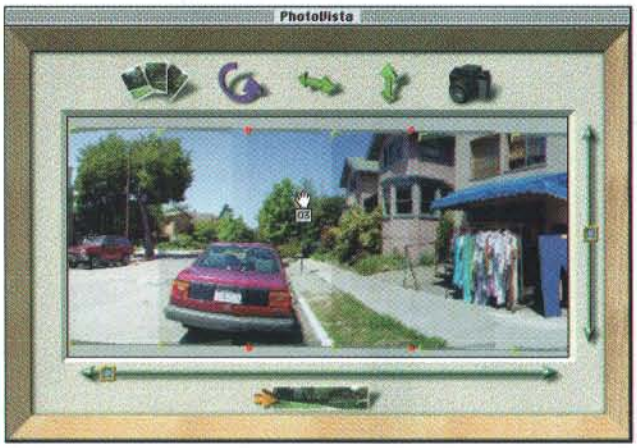
Competition for QuickTime VR

Live Picture's PhotoVista 1.0 creates smooth VR panoramas

The buzziest of today's buzzwords is *virtual reality,* and QuickTime VR is the reigning queen bee. However, Live Picture's soon-to-be-released PhotoVista 1.0, based on a different VR standard, RealVR, offers an alternative that creates VR vistas that are smaller in file size and smoother to navigate.

Our first look at a beta version of this $99 application shows using it to be an exceptionally easy way to create virtual panoramas by combining adjacent, overlapping images, typically captured with a consumer-grade digital camera. Since PhotoVista's RealVR images are JPEG-based, they're small enough to be quickly downloaded from the Web.

Users import their source files into PhotoVista and rotate them as necessary. Next, they choose, from a Web-updatable list of lens/camera settings that includes all the familiar names in digital cameras, the lens/camera combination that was used. Finally, the files are automatically blended together in minutes to produce a single, highly compact JPEG file that's much smaller than one produced by the multiple-tile structure QuickTime VR uses. As a result, a RealVR file responds more quickly during panning. Also,



PhotoVista's attractive, easy-to-use interface helps you create virtual panoramas in Live Picture's RealVR, a VR format that competes with — and is, in some ways, superior to — Apple's QuickTime VR.

RealVR's *progressive download* capability provides instantaneous feedback during downloading.

PhotoVista can also save files in QuickTime VR format, but when it does so, compression and other output options are nonexistent. Also, the test files saved in QuickTime VR format by our beta version appeared squished when displayed in Apple's MoviePlayer application.

Whereas Apple's QTVR supports only cylindrical projections, PhotoVista's RealVR technology supports spherical as well as cylindrical projections. This gives you the unique ability to capture a scene with a superwide 135-degree vertical field of view in a minimum number of shots, using an inexpensive fish-eye lens.

A demo version of PhotoVista and the browser plug-in for displaying RealVR files are available from Live Picture's Web site. Check 'em out, and make virtual reality a reality. · *Jeffy Milstead*

Pros: Inexpensive. Easy to use. Creates compact JPEG files. Smooth navigation.
Cons: Main window isn't resizable.
Expected: Summer 1997.

ISDN for the Average Joe

YoYo Professional provides easy setup and control of ISDN and phone lines

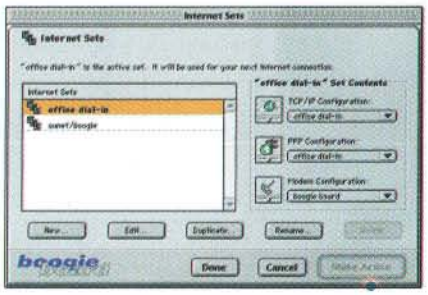
If all you've got is a 28.8-kbps modem, cruising the information highway can feel more like being stuck in rush-hour traffic. Big Island Communications' YoYo Professional ($499) offers an ISDN hookup in combination with sophisticated YoYoSoft call-logging and -management software.

The BoogieBoard, YoYo Pro's hardware component, is a PCI-based ISDN terminal-adapter card. The BoogieBoard sports two analog phone jacks; having two jacks lets you, for example, make voice and fax calls at the same time — and since the BoogieBoard can be powered independently, it works even when your Macintosh is turned off.

However, in the prerelease unit that we examined, support for 128-kbps dual-channel data calls was not yet implemented — ISDN speed remained stuck at 64 kbps. Big Island promises to bring the BoogieBoard up to speed by the time YoYo Professional ships this summer.

YoYoSoft, YoYo Professional's software component, offers a wide range of features not found in other ISDN products. For one thing, it provides a greatly simplified approach to Internet setup and to switching among connections. It logs caller-ID information and the time and duration of calls. You can even set it up to forward alphanumeric caller-ID information automatically to your pager.

If you've been considering an ISDN upgrade, YoYo Pro is well worth investigating. · *Henry Bortman*



YoYoSoft simplifies the task of switching among Internet dial-up connections by letting you create "sets" of related Open Transport (TCP/IP, PPP, and modem) configurations.

Pros: Two analog ports. Advanced call-management software.
Cons: Dual-channel data-call support still in development.
Expected: Summer 1997.

PowerTower Pro
Power Computing, Round Rock, TX
800-405-7693 or 512-246-7807
www.powercc.com

The Future of the PowerPC
To see a road map of future plans for the PowerPC microprocessor family, go to www.mot.com/SPS/PowerPC/overview/roadmap.html

New Chip Doubles Mac Speed

Power Computing unveils the first Mac OS systems based on new PowerPCs

DON'T READ THIS STORY. Just look at the chart below — it tells you all you really need to know: The next-generation PowerPC chips (see Future Tech, May '97, page 24) are here, and they're very, very fast. Very, very, *very* fast.

We recently slipped into the back room of Power Computing's R&D center to test a prerelease version of the company's newest PowerTower Pro, based on a soon-to-be-released PowerPC microprocessor code-named Arthur. Even months before its planned August debut, this is one tower with power to spare.

The Arthur chip in the PowerTower prototype we tested was running at 275 MHz — a snappy clock rate, but only one reason for its speed. More important, the Arthur chip has been optimized from the ground up to run the Mac OS and associated applications and includes a second integer unit to help speed things along. Also, the Arthur is tightly coupled to a 1-MB *backside* L2 cache.

Backside caches are independent of the system bus and can run at bus rates equal to that of the microprocessor's clock rate, as was the case in the 275-MHz system we tested. In contrast, UMAX has just introduced an *inline* cache technology it calls CacheDoubler (see "MacUser Report Cards" in this month's Short List); other modern Macs use a slower *lookaside* cache. Inline caches are superior to lookaside caches, but nothing can match the speed and efficiency of a backside cache.

A second new PowerPC microprocessor, code-named Mach 5, is also being readied for release. Based on the 604e, the Mach 5 will post exceptional clock speeds, due to its .18µ manufacturing process. The first Arthur chips will be based on a larger, slower .25µ process — but when .18µ Arthurs appear, expect some ludicrously fast performance: Preliminary rumors indicate that the Arthur's overall performance should, in clock-speed-to-clock-speed comparisons, exceed that of the Mach 5. What's more, the Mach 5 will be limited to inline and lookaside caches.

Remember also that the Arthur is a low-power, tiny chip: Its miserly power requirements obviate the need for expensive cooling systems (and make it ideal for future screaming-fast portables), and its tiny size makes it relatively inexpensive to manufacture. Power Computing plans to pass these low-cost advantages on to you and offer its first Arthur-based systems late this summer — with new, high-speed graphics hardware — at prices comparable to those of its current high-end PowerTower Pro models.

Maybe by then the Arthur will have a real name — other than ohmygoditsfast.

· *Rik Myslewski*

MacUser LABS Twice As Fast *New PowerPC chip buries the competition*

A prototype Power Computing PowerTower Pro equipped with a next-generation (G3) PowerPC microprocessor, code-named Arthur, blasted past even the fastest shipping Mac OS system, the 250-MHz PowerTower Pro 250, and left a 275-MHz 603e-based Power Mac 6500/275 Creative Studio in the dust.

The prototype Power Computing PowerTower Pro we tested had 64 MB of RAM, a 50-MHz system bus, and a 275-MHz Arthur PowerPC microprocessor with a 1-MB L2 backside cache running at 275 MHz. Since the disk and graphics subsystems of the prototype were not those of the planned shipping system, we ran only the MacBench 4.0 processor and floating-point tests. Details on configurations of the reference systems can be found in this month's Short List.

	MacBench 4.0 Processor Score	Floating Point Score
POWER COMPUTING POWERTOWER PRO WITH A 275-MHZ "ARTHUR"	1,067	567
POWER COMPUTING POWERTOWER PRO WITH A 250-MHZ 604e	598	499
APPLE POWER MAC 6500 WITH A 275-MHZ 603e	425	354

MacBench 4.0 scores are relative to those of an Apple Power Mac 6100/60 running System 7.5.5 with a 30-MHz bus, 16 MB of RAM, 2 MB of built-in graphics RAM, no L2 cache, and a 250-MB hard drive. The baseline score is assigned a value of 100 for all MacBench tests. All systems are tested as configured by vendors but with AppleTalk turned off and virtual memory turned on.

New & Notable

ITC on Display This single-CD über-collection of fonts contains the entire ITC Fontek Display Library of 375 typefaces, which usually cost $40 apiece. $2,999. International Typeface Corp.: 212-989-8072; www.esselte.com/itc.

ReBirth Roland's classic analog synthesizers, the TB-303 Bassline and the TR-808 drum machine, have been digitized into a single software synthesizer, with dials and sliders that work just like the hardware. It exports 16-bit, 44-kHz AIFF or .WAV stereo audio files. $199. Steinberg North America: 818-993-4091; www.steinberg.net.

Sonic DVD Studio 4.0 Master DVD discs on your Power Mac 9600 with this system of software and PCI boards that includes an MPEG-2 video encoder and decoder, audio I/O, and audio decoder. The DVD Studio supports MPEG-1 and MPEG-2, CBR encoding, inverse telecine, and both NTSC and PAL video. $75,000. Sonic Solutions: 888-766-4248 or 415-893-8000; www.sonic.com.

Panasonic CoolShot KXL-600A and 601A These low-cost digital cameras can capture up to 96 still images in 320-x-240-pixel resolution and 24 images at 640 x 480 pixels on their 2-MB CompactFlash cards. An optional 4-MB card ($149) stores up to 192 low-res images. The 601A also comes with a swiveling 1.8-inch color LCD. $399 and $599, plus $59 for the Mac-interface kit. Panasonic Computer Peripheral Co.: 800-742-8086 or 201-348-7000; www.panasonic.com/alive.

NewerTECH VIEWpowr 1400/16 This 16-bit video-out card for your PowerBook 1400 provides either dual video or video mirroring from your notebook to a separate monitor. It supports various resolutions of up to 1,152 x 870 pixels and has 1 MB of graphics RAM. $299. NewerTECH: 800-678-3726 or 316-943-0222; www.newertech.com.

· *Brooke C. Wheeler*

Reviews Rating Key
5 Outstanding · 4 Very Good · 3 Acceptable
2 Poor · 1 Seriously Flawed · Dangerous

Brushes with Greatness

Painter 5

4½

$449; upgrade, $99 *(list)*

Paint application's significant upgrade features a robust brush selection that all artists will love.

BRUSHING UP ON THE BASICS was Fractal Design's approach when it developed the latest revision of Painter, version 5. And it succeeded — literally; Painter 5 features a return to its basic strength of brushes, brushes, and more brushes.

Although Painter's list of brushes already seemed immeasurable, Fractal Design has opened up Painter's architecture to third-party developers, meaning that new brushes can now plug into the application. The new API means that the supply of brushes is now inexhaustible, because other developers can add functions to Painter without necessitating a program upgrade.

Two components — a *method* and its *subcategories* — control each brush. For example, a brush that looks like an artist's pastel chalk uses the Cover method (which covers the colors it paints over) and a Grainy Hard Cover subcategory (which reacts to "paper" grain by drawing color swatches that are somewhat pixelated). In the new architecture, there's a Plug-in brush method, and the new brushes exhibit several subcategories of never-before-seen behaviors. One plug-in adds grain; another adds blur; and others paint with hue, saturation, or value. One outstanding subcategory, called the Deep Well, creates what appear to be fractal repeats inside any shape you touch.

Painter 5 stands alone. Nothing can compete with its vast array of tools for creating complex, richly detailed, and subtly beautiful digital images.

The new methods and subcategories have been organized into a myriad of ready-to-use brushes, although you can add more functions to any brush simply by assigning it one of the new plug-in subcategories. There are new brushes — Scratch Remover, Sharpen, Blur, Dodge, and Burn — for retouching. There's a wonderful set of Gooey brushes that bulge, pinch, create turbulence in, twirl, and rake your image. There's even a brush that creates fire (it sounds more impressive than it is). In the New Paint Tools category are the Dry Brush; the Palette Knife; and the charmingly named Big Wet Luscious brush, which turns your canvas into a moving liquid.

Making Adjustments

Painter 5 also has 11 dynamic plug-ins, which provide features similar to those of adjustment layers in Adobe Photoshop 4.0. Dynamic plug-ins apply special effects to whatever lies beneath them. Effects can be changed until you have made them permanent.

The effects range from the simple Brightness and Contrast to several spectacular effects. The Liquid Metal effect allows painting with a highly reflective metal. The Impasto effect lets you create highly textured surfaces by using a paper texture, a weave, or the luminance of the original image as the basis for the 3-D brush strokes. The Bevel World effect sports an extensive set of controls: You can create a two-color bevel and can change the height of any of three areas of the bevel. This lets you make mountains or moats around your *floater* (the section of the image to which the effect is being applied) in addition to making the "traditional" bevel.

Although you can apply many of these effects to an entire image or to a portion of the canvas without first creating a floater, most of the dynamic effects create a floater that can be moved but that retains the source imagery from which it was created. We would prefer it if you

could also have the effect react to the background canvas and change as you move it to other locations. The Kaleidoscope, Brightness and Contrast, Equalize, and Posterize effects do work in this way, but most of the others don't.

Come Join the Mask-arade

One of the nightmares with previous versions of Painter was learning how to create selections and masks. Fortunately, this has been simplified; the masking process now works like Photoshop's. Instead of having only one mask but being able to keep multiple selections, Painter now allows only one selection but up to 32 masks per image. Each floater can have one visibility mask for specifying what will be seen and what will be hidden in the floater.

One of the big drawbacks of the new scheme, which seriously limits editing capabilities, is that you cannot create a selection within a mask. Neither can you easily copy masks among images (although you can work around this), nor can you easily exchange masks among floaters in the same image. You can copy a mask between a floater and the canvas in the same image, though, so if you need to get a mask from floater A to floater B, you can copy it to the main canvas from floater A and then pick it up with floater B.

Improvements have also been made to the program's Internet features, and you can connect to Fractal's Web site directly from the program, to check for new brushes, plug-ins, or libraries.

Face Painting

Painter has a cleaned-up interface, and brush control is more precise: You can now set brush sizes numerically, you can enter precise numbers in various palettes instead of using a slider bar, and you can see the entire list of painting tools with the Paint Drawer closed.

Annoyances include the removal of support for paths and of support for creating a precise, fixed-size rectangular selection. Also, there are still too many palettes and too little image space, even on a large monitor — Painter users should seriously consider a two-monitor setup.

If you don't feed Painter 5 enough RAM, it will behave oddly at unexpected moments — and it doesn't always warn you when it's low on RAM. Your first clue about inadequate RAM may be when a feature that used to work begins to balk. If you use Painter for long stretches of time and open and close multiple images, it's a good idea to quit periodically and relaunch the application.

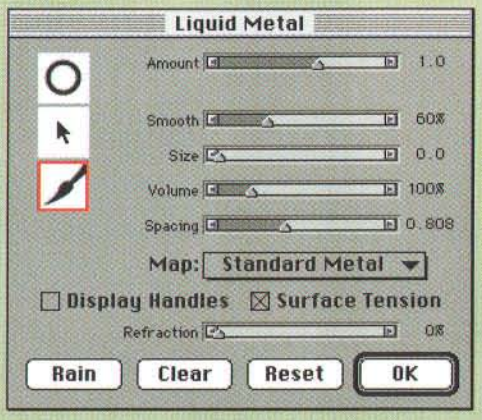
We also found the speed of previews very inconsistent. After we increased several settings of the Growth Brush (on the Esoterica menu), Painter took ten minutes to display the preview. What's even worse is that you cannot interrupt the preview and even slight movement of the slider causes a new preview to appear (which takes an additional ten minutes).

The Bottom Line Painter 5 gets very high marks for inventive new tools and features but falls short in speed and in masking features. These drawbacks, however, are minor annoyances. The application is essential for any artists who want to add individuality and personality to their work. · *Sherry London*

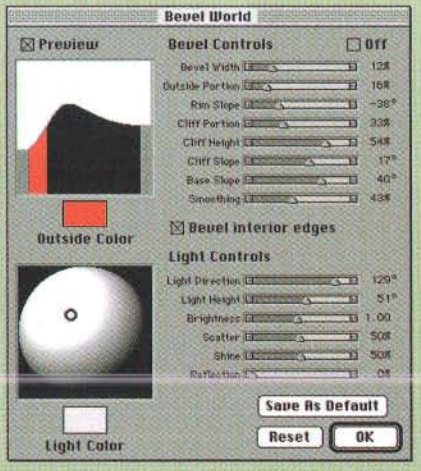
Special Effects *Strokes that would have made Picasso jealous*

Painter 5's biggest strength is also one of its biggest weaknesses — a myriad of screen-space-hogging palettes that control a variety of heretofore impossible effects, from subtle to outlandish. Here are four of the better ones:

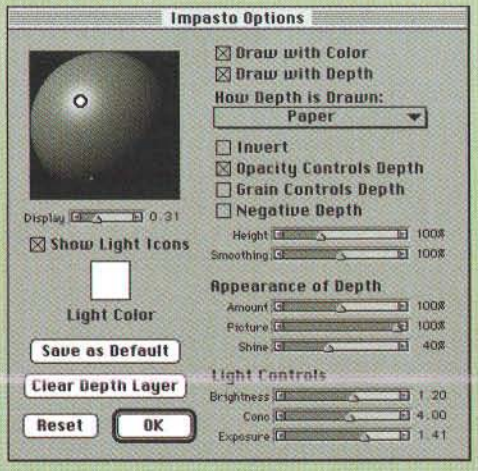
In the Burn Options palette, you can control not only the brush flame's breadth and strength but also the apparent wind direction and strength — with surprisingly attractive results.



The Liquid Metal palette controls a brush that lets you paint with a highly reflective liquid, forming drops that look like, well, liquid metal — Painter's wildest effect with the highest "wow" quotient of them all.



The Bevel World palette gives you incredible control over all facets of a beveled edge: You can create an area of bevel both inside and outside your object; build up the portions of the bevel into a steep cliff; or create a smooth, rounded effect.



The Impasto Options palette is a good example of the impressive arrays of controls that Painter 5 offers for traditional painting techniques such as impasto, which adds a deep texture effect to your painting.

Adobe Dimensions 3.0
Adobe, San Jose, CA
800-649-3875 or 408-536-6000
www.adobe.com
Reader service: circle #402

Adobe Dimensions 3.0

$199; upgrade from 2.0, $69 *(list)*

3-D application offers unique PostScript and raster support; experienced users want more.

ADOBE DOMINATES THE WORLD of 2-D imaging and desktop publishing; its forays into 3-D content-creation applications have been less successful. The latest version of its flagship 3-D software, Adobe Dimensions, does little to reverse that tradition.

Designed specifically for creating 3-D PostScript artwork, version 3.0 adds much-needed support for raster-based images to Dimensions' support for vector-based images. Among its new features is support for bitmapped textures, making Dimensions the first 3-D application to let you combine PostScript and raster images. Despite the improvements, however, Dimension's 3-D tools are far behind the curve and will leave experienced 3-D users wanting more.

Except for some streamlining of menus and palettes, Dimensions 3.0's interface is virtually unchanged from that of version 2.0. Like any respectable 3-D program, Dimensions presents a 3-D view within which you create, rotate, and move models. You can set lights via the program's Lighting palette, and the much needed new Camera palette lets you move your vantage point around in your scene via a simple 3-D trackball interface. In addition to aiding navigation, the Camera palette includes a Lens slider, which makes it easy to interactively change the perspective on your scene.

You can create models in Dimensions by using tools for primitive shapes in order to create cubes, spheres, cones, and cylinders. Similar to primitives in 2-D programs, these shapes are created simply by clicking and dragging. To create more-complex shapes, you can lathe them around an axis or use the program's Extrude and Revolve tools, which take 2-D images and stretch them into the third dimension.

As in version 2.0, extruding or revolving means creating and selecting a 2-D profile and then entering Extrude or Revolve values in the appropriate palette. Unfortunately, there's no interactive, mouse-based way to extrude or revolve — you're in for a good deal of trial and error, entering various values, in order to get the effect you want.

Dimensions provides a set of 2-D drawing tools that let you create base profiles directly within the program. We found that these tools leave a lot to be desired: You're limited to a duplicate of Illustrator's Pen tool as well as to Circle, Rectangle, and Type tools and Scale, Rotate, and Scissors for editing. Although we don't expect Adobe to duplicate Illustrator's entire tool set here, we'd at least like to see Pathfinder-like features for performing 2-D Boolean operations.

Fortunately, like all other applications from Adobe, Dimensions 3.0 provides very good Macintosh Drag and Drop support, which makes it quite simple to create profiles in Adobe Illustrator and then quickly drop them into Dimensions.

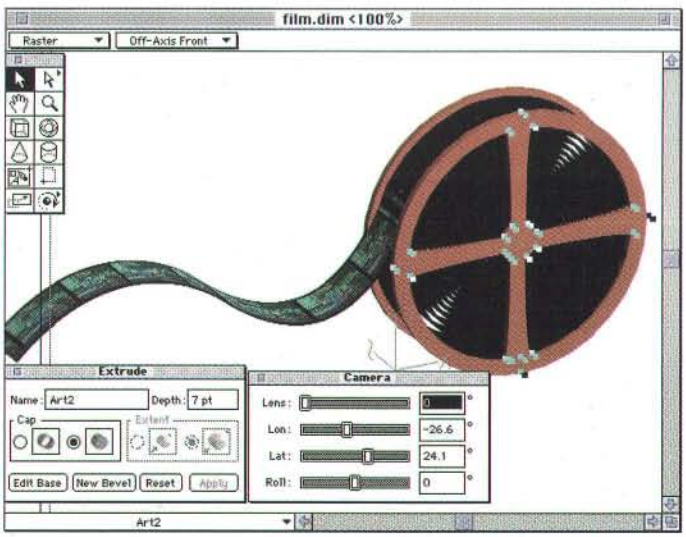
You don't edit 2-D shapes in the main window; rather, you first have to define a new 2-D shape, which, in turn, opens a separate 2-D editing window. Dimensions also requires you to draw base profiles in a separate 2-D window rather than directly into your 3-D scene, and creating shapes relative to each other is difficult. Hey, Adobe: Move the 2-D drawing tools into the 3-D environment.

Dimensions does link your 2-D base profile to the resulting 3-D object, however. You can go back and edit the 2-D base profile at any time — click on the Apply button, and Dimensions will update your extruded or lathed object to reflect the changes you've made to the base shape. Pretty slick.

Also new to Dimensions is the Object Browser palette, which provides a Finder-like scrolling list of all the objects in your document. Via the Object Browser, you can show, hide, lock, or unlock any shape in your scene. Although it provides little functionality, the Object Browser can be very handy for selecting objects when your scene has become crowded.

Previous releases allowed you to map vector artwork onto your 3-D shapes, and version 3.0 improves on this feature with the ability to wrap bitmapped artwork around an object, letting you add more-realistic textures to your shapes. On the other hand, Dimensions' texture mapping is bare-bones, providing none of the controls (such as for multiple maps, bumps, and reflectance) of a full-featured 3-D application.

Adding to the previous wire-frame, draft, and PostScript rendering modes, Dimensions is now able to render a raster image for immediate export to Photoshop or to a page-layout or Web-page-creation application.



The Camera palette, new in Adobe Dimensions 3.0, lets you change your viewpoint via simple sliders.

The Bottom Line Adobe Dimensions is a good choice if you're simply creating informational graphics or the occasional 3-D effect in a 2-D illustration. We're pleased with its new Camera controls and bitmapped textures, but its modeling tools need a lot of improvement. Even basic 3-D packages now feature lofting and sweeping tools, features we'd like to see added to Dimensions. Despite these complaints, users of previous versions should be pleased with the update and new users may find it an acceptable tool for simple 3-D work. · *Ben Long*

form•Z 2.9
auto•des•sys, Columbus, OH
614-488-8838
www.formz.com
Reader service: circle #403

form•Z 2.9

$1,995 *(list)*

3-D-modeling application is faster and packs tons of new features based on organic modeling.

DON'T BE FOOLED — auto•des•sys' upgrade of form•Z from version 2.8 to 2.9 only *sounds* incremental. In actuality, auto•des•sys packs more new features into version 2.9 of form•Z than most applications ever see added in one or even two major updates. Version 2.9 of the professional 3-D-modeling and -rendering application includes a whopping number of new features, ranging from interface enhancements and new modeling tools to major speed improvements — thanks to QuickDraw 3D support — and a rewritten memory manager. All these changes serve to strengthen form•Z's position as the premier modeling package for the Mac.

Longtime form•Z users will notice many subtle interface differences within the program's many palettes. New tools and options abound, including a Photoshop-like Magnifying Glass tool and the ability to drag objects with the Pick tool, an improvement that saves countless time-consuming swaps with the Move tool.

Also new is the ability to assign a keyboard command to any of form•Z's 500-plus functions. Although single keys cannot be used, combinations of modifier keys and mouse clicks can be assigned to just about everything. In addition, you can create different sets of keyboard shortcuts for different modeling tasks.

Even with these changes, the weakest point of form•Z 2.9 is still its interface — but not because it's ill conceived. If you invest the substantial amount of time required to learn to use it, form•Z's interface reveals itself to be intelligently planned and well implemented. But if you haven't worked with form•Z before, prepare to be frustrated by nonstandard tools and an overwhelming number of arcane options.

A multitude of new modeling features (occupying 175 pages in the manual) center mostly on organic modeling. Although form•Z has always been in a class by itself for its ability to create and manipulate solid models, its polygonal nature has made creating organic shapes difficult. Metaformz, form•Z 2.9's metaballs feature, eases the creation of organic shapes by turning any object into an implicit surface. When surfaces are brought close to each other, they blend and merge like blobs of goo in a lava lamp.

What separates form•Z's metaballs feature from that of other applications is the degree of control provided over each metaform. Controlling form•Z's Metaformz tool doesn't feel as much like a random, hope-this-does-what-I'm-expecting process as controlling other metaballs implementations. On the minus side, rendering metaforms at very high resolution reveals faceting and geometric artifacts. Although most users probably won't encounter this limitation, those rendering at film-quality resolutions may be frustrated.

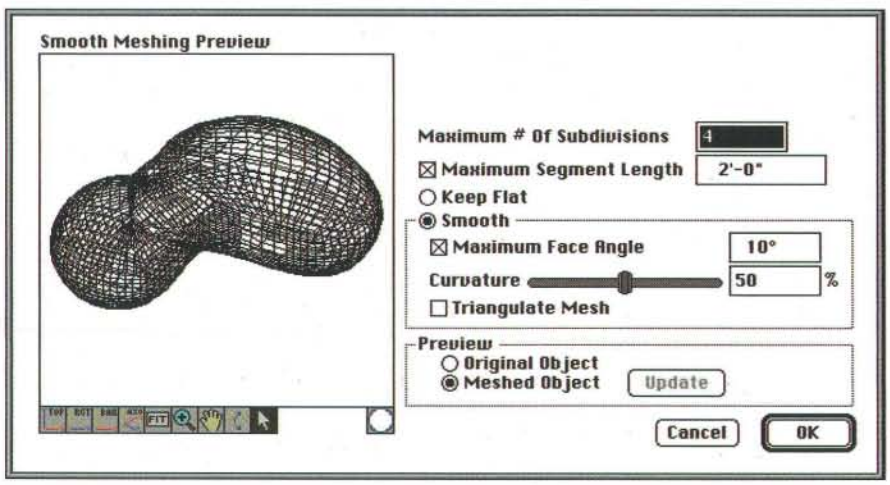
Users doing organic modeling will like the new Skin tool, which lets you sweep multiple shapes along any number of paths. In theory, this feature should allow you to create complicated curved surfaces such as boat hulls or animal bodies. In practice, it takes time to learn how to reduce shapes to multiple sweeps, and form•Z is very choosy about source geometry, often requiring you to break sources into smaller pieces. In some instances, the Skin tool is an example of auto•des•sys' providing too much power and control: It's great for experienced modelers, but many beginners would rather have their Mac make these decisions for them.

form•Z 2.9's new Smooth Mesh tool is similar to the previous Mesh tool, in that it breaks a polygonal surface into a mesh of polygons that can be moved and distorted. The Smooth Mesh tool improves on the meshing operation by providing controls for the curvature of the resulting mesh. The practical upshot of this is that you can use the Smooth Mesh tool to turn a hard-edged geometric object into a flowing, organic shape.

The new Displacement tool lets you map a bitmapped image onto a shape in order to create deformations. Rather than changing normals at rendering time, the Displacement tool actually changes a model's geometry. And, for compositing photos and 3-D scenes, form•Z now provides a very simple-to-use perspective-matching tool.

Despite the addition of new Arc tools in this version, the 2-D drawing features are still frustrating. We'd love to see a Bézier tool like that of Illustrator, and until the proper tools are provided, we'll continue to draw source profiles in Illustrator.

RenderZone, form•Z's engine for Phong and ray-tracing rendering, has seen many improvements as well. Semitransparent objects can now cast shadows that carry their color. Blur, procedural skies, and depth cuing are now provided by RenderZone, as is automatic creation of QuickTime VR panoramas and object movies. Texture-mapping controls — like so much of form•Z's interface — are still mired in multiple modal dialog boxes.



Like most of form•Z 2.9's new features, the Smooth Meshing tool makes creating organic forms and shapes much easier.

The Bottom Line Finding a better modeler — for any platform — than form•Z has always been difficult, and version 2.9 makes it nearly impossible. Although the program has a steep learning curve, its power makes the climb well worth it. · *Ben Long*

4th Dimension Version 6
ACI US, Cupertino, CA
800-881-3466 or 408-252-4444
www.acius.com
Reader service: circle #404

Expand 4D's Web Power
Give your database unprecedented Web capabilities with 4D externals from Foresight Technology
www.fsti.com

4th Dimension Version 6

$299; upgrade, $129; 4D Desktop, with 4D Insider and 4D Compiler, $499 *(list)*

Relational-database manager and programming environment is powerful enough to go where FileMaker Pro fears to tread.

IT'S BEEN A LONG TIME COMING — so long that its version number leapfrogged from 3.5 to 6 — but the new version of ACI US' professional database-development environment was worth the wait. Sporting an improved interface and a slew of powerful new features, 4th Dimension Version 6 boosts productivity and allows for faster, more powerful cross-platform database applications — and its newly competitive price, $299, makes it an excellent value as well.

Version 6's interface improvements include a centralized object viewer, called Explorer, that enables you to quickly and easily manage all database objects: tables, forms, menus, and methods (formerly called procedures, now renamed in object-oriented-programming parlance).

Using the new Form Wizard, you can select predefined themes, customize styles, and save new templates. Once you have created forms, you can easily modify such aspects as font, size, and style via a tabbed interface — simply double-click on an object, and the appropriate configuration interface pops up. Forms can be automatically optimized for Mac OS or Windows use. Other design tools, such as the menu, list, and method editors, have also received face-lifts, and the entire application sports a gray-background, 3-D look that's easy on the eyes.

Version 6 is more than just a pretty face, however. For example, it retains 4th Dimension's unique multithreading environment, which allows multiple concurrent processes such as sorting, searching, and data entry. It also continues ACI US' commitment to cross-platform deployment options and a client/server upgrade path. (4D Server Version 6 will be shipping by the time you read this.)

Version 6 adds a beefed-up debugger with break lists, call-chain listing, hierarchical listing of database-object evaluations, and point-and-click evaluation of expressions from within the database code.

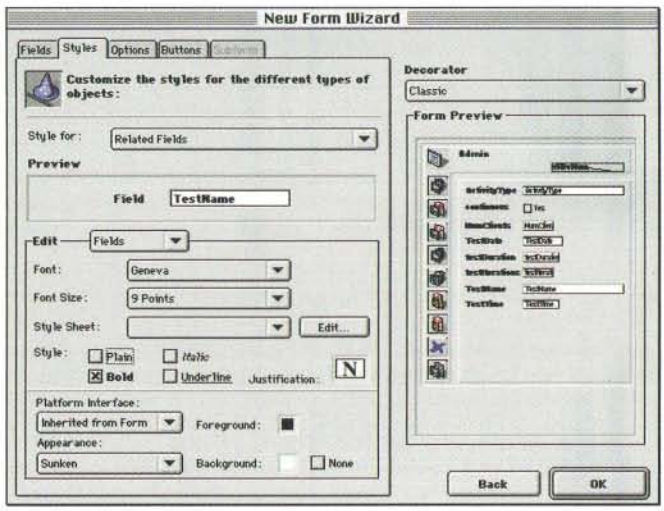
Form objects, such as text areas, fields, lists, and graphics, can now be dragged from one area to another. They can also trap such events as double-clicks and field entry, making the design of interactive forms easier. You can also specify actions — setting unique record IDs, for example — that should occur when they are triggered by a table event such as saving, loading, or deleting records.

Although all these improvements are impressive, the award for coolest new feature goes to Version 6's Web publishing capability. With little or no programming on your part, Version 6 converts listings, reports, and input forms to HTML, making your 4th Dimension databases available to standard Web browsers, all without the need for any additional Web-server software.

But Version 6's Web power doesn't stop there. In most Web-site implementations, developers must devise sophisticated methods (complex URL encoding or cookies) to discover a user's identity and track that person's usage of the site; 4th Dimension Version 6 handles all this information gathering automatically. As impressive as this feature is, however, it's still much less flexible than third-party site-management and user-tracking options, such as those provided by Foresight Technology's NetLink/4D.

Although 4th Dimension's interface and features have been significantly upgraded, the database engine and programming language in Version 6 have changed little. Our informal testing showed speed — never 4th Dimension's strong suit — to be somewhat improved: Version 6 performed a typical mix of record creation, updates, queries, and joins roughly twice as fast as Version 3.5.3.

Basic queries and joins are fast enough, but when ordering (previously called sorting) on multiple keys, querying nonindexed fields, and importing into indexed tables, Version 6 is painfully slow. Experienced 4th Dimension programmers have developed coding tricks that can speed interactive 4th Dimension applications, but for ad hoc data analysis, Version 6 falters. It also lacks support for standard SQL coding and ODBC data access, and in spite of its terminology changes, the program remains a procedural, not an object-oriented, programming environment. We also missed comprehensive support for application-development teams.



Not only does 4th Dimension Version 6's new Form Wizard offer predefined "decorator" themes but you can also further customize styles for different fields.

Generally well-organized online documentation is provided in Adobe Acrobat and HTML formats, with printed manuals available for an additional $99. According to ACI US, 4th Dimension Version 6 requires at least a 68020 processor, System 7.0, and a Mac with a minimum of 16 MB of RAM. 4th Dimension Version 6 is PowerPC-native.

The Bottom Line Simply put, 4th Dimension Version 6 is a much improved update of an already impressive product. It has an attractive interface, significant design tools, and powerful programming abilities — including Web publishing — all at a new low price. Although not perfect, this program is your best choice for cross-platform development of stand-alone or workgroup databases. · *J. W. Davis*

Macromedia Flash 2
Macromedia, San Francisco, CA
800-457-1774 or 415-252-2000
www.macromedia.com
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Media Cleaner Pro 2.0
Terran Interactive, San Jose, CA
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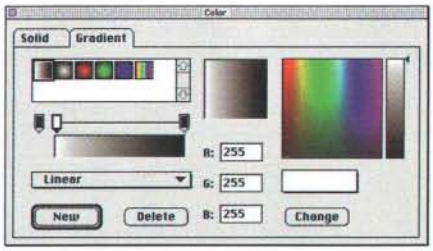
Macromedia Flash 2

$199; upgrade, $99 *(estimated street)*

Web multimedia tool lets you create vector-based animations, but its interface lacks luster.

A WELCOME EXCEPTION in the world of Web animation tools, Macromedia Flash 2 creates animations based on vector information — mathematical instructions that are much smaller in file size than bitmaps and hence faster to download. A Flash 2 image takes up only a fraction of the file size of a bitmap-based Web image of equal dimension.

Vector animations can tend to look flat and blocky — unlike bitmap data, which can include textures and continuous-tone artwork. To work around this limitation, Flash 2 allows you to create gradients and place bitmaps *within* vector data. You can import bitmap images and convert them to vector data through tracing or use them as placed images that commingle with vectors. Flash imports files in an amazingly wide array of formats: EPS, AutoCAD DXF, bitmap, Enhanced Metafile, GIF, FutureSplash, JPEG, AIFF, Shockwave



Flash 2 offers the best of both worlds to Web artists and animators: compact vector-based animations into which bit-mapped elements such as gradients can be inserted.

Flash, and Windows Metafile. And in addition to saving images in Flash's proprietary file format, you can also export QuickTime movies, animated GIFs, and PICT sequences.

Animations are built with a timeline interface that supports multiple layers. It's also possible to *onionskin* — see through multiple outlines to chart animation paths — and to easily make buttons that react according to mouse-up, -down, or -over actions. Text handling is not as exacting as in a page-layout program, but you can kern and reshape characters. Various sound-compression settings are available, and a powerful report generator tells you exactly how big your files are and breaks down the figures into sound and graphics. Interactivity is programmed entirely through pull-down menus — nonprogrammers will be happy that no scripting skills are needed.

Flash 2's learning curve is a little steep, due to the application's unconventional interface — in fact, it's nearly impossible to learn without the manuals or online tutorials. For example, many animation-creation menus are context-sensitive pop-ups that you access by clicking on specific tools and palettes that don't show up in the pull-down menus.

The Bottom Line If you're a Web artist or developer who wants to create small, yet impressive animations that automatically resize to fit any screen, Flash 2 is for you. · *Lynda Weinman*

Media Cleaner Pro 2.0

$359; upgrade from version 1.0, $129 *(list)*

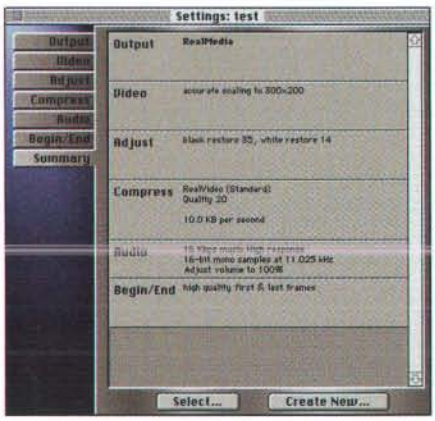
Desktop-video-compression utility gets even better with improved features.

THE DE FACTO STANDARD desktop-video-compression utility, Terran Interactive's Movie Cleaner Pro, gets even better — and is renamed — as Media Cleaner Pro 2.0. This feature-rich utility integrates the Web-Motion plug-in, also from Terran, and adds support for RealMedia, RealAudio, and VDOLive. It offers previews, multiprocessor support, new Settings controls, audio normalizing and levels controls, multiple QuickTime tracks, and an Adobe Premiere Export plug-in too.

Beginners can use the helpful Media Cleaner Wizard, which guides you through the settings by asking questions in plain English. A split-screen preview shows "before" and "after" views of frames. Settings can be saved and modified in the new easy-to-use, tab-based interface. QuickTime-tracks support includes video, audio, sprites, 3-D, text, and music/MIDI; the latter feature will become more important when QuickTime 3.0 is released.

Image editing has improved and includes custom noise reduction; cropping and scaling; and control over blur, levels, hue, gamma, cropping, and scaling. Another new feature is advanced data-rate control for the Animation, JPEG, and Video codecs (but not for Radius' Cinepak); these codecs can now be used to optimize CD-ROMs for use in high-speed CD-ROM drives. Other features include cross-platform compatibility, de-interlacing, "faststart," and HTML creation. The documentation is also first-rate: There's a printed manual with tutorials, a soft copy in HTML, and hot links to updates on the informative Terran Web site.

Media Cleaner Pro 2.0 is not perfect, but it's close enough to garner our highest recommendation. There's no support for GIF or PICT files, no trimming or editing, and no custom keyframes. There's also no data-rate analysis, as in Adobe Premiere or the shareware utility Spike. The Batch window can be difficult to use, and the



Media Cleaner Pro 2.0's settings can be checked via a summary window; clicking on the appropriate tab gets you detailed information on the six settings listed here.

Wizard doesn't mention how to get to RealMedia or VDOLive.

The Bottom Line Media Cleaner Pro 2.0 is a valuable tool with a robust feature set and is an excellent value for those doing compression for CD-ROM or the Web. Its Wizard, batch, and settings controls make choosing compression settings and formats much faster than with any of its competitors. · *Rich Young*

HP LaserJet 5Si Mopier
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HP LaserJet 5Si Mopier

★★★★½

$9,143 *(list)*

Network printer with a goofy name is fast and versatile and prints great-looking pages.

MacUser LABS **YOU KNOW THE DRILL:** Pick up your document from the network printer, trek to the copy machine, pray as you press the start button, and hope the copier doesn't mangle every sheet of paper it processes. With the cross-platform Hewlett-Packard LaserJet 5Si Mopier, you can cut out the trekking, praying, and hoping; not only does the 24-ppm Mopier print faithfully and fast but the only thing missing from its paper-handling capabilities is the ability to create origami.

The Mopier (an unfortunate neologism derived from "multiple original prints") finishes jobs in a flash and gives you — on the same complex but ultimately decipherable on-screen menu — the options of stapling, duplexing, and collating. It has a 3,100-sheet paper capacity and a multibin mailbox for easy job separation and retrieval. The Mopier also has four input sources: two 500-sheet trays, one multipurpose 100-sheet tray, and a 2,000-sheet tray that's located underneath the printer, and each tray handles all paper types.

An optional envelope feeder holds as many as 100 envelopes but lowers the print rate to 17 pages per minute. A 420-MB internal disk drive can store documents, forms, templates, and fonts to help minimize network traffic and speed print jobs. JetAdmin software, which allows network administrators to easily monitor, reschedule, or delete print jobs, is also included.

For a real-world perspective, we speed-tested the Mopier alongside Apple's LaserWriter 12/640PS. On our Microsoft Word test, the Mopier was clocked at 14.3 pages per minute, compared to the 12/640PS' 8.3 ppm. On our Microsoft Excel test, the Mopier was rated at 2.5 ppm, whereas the 12/640PS followed behind at 2.0 ppm. When printing Microsoft PowerPoint presentations, the Mopier was rated at 5.1 ppm, a full page per minute faster than the 12/640PS' 4.1 ppm.

In addition to having impressive speed and paper-handling capabilities, the Mopier produces great-looking output. Grayscale images are clean and show good detail, and gradations are smooth. Line-art and text quality are excellent; we were unable to find any jaggies, and the black the printer produces is nice and heavy.

The Bottom Line With the LaserJet 5Si Mopier, Hewlett-Packard has combined professional output quality with speed and ease of use. Although the Mopier won't replace all photocopiers, it makes creating multiple original prints — we just can't bring ourselves to say "mopies" — less stressful. · *Kedren H. Dillard*

Tango for FileMaker 2.1.1

★★★★½

$350 *(list)*

Web FM 3.0v3

★★★★

$245 *(list)*

FileMaker Pro add-ons help you get more mileage out of your database by allowing you to easily publish it on the Web.

WITH ENOUGH HORSEPOWER and features to turn the head of any Mac Webmaster, EveryWare Development's Tango for FileMaker 2.1.1 and Web Broadcasting's Web FM 3.0 are solid, well-made products that put your FileMaker Pro database on the Web.

Giving Web users access to a FileMaker database requires running a plug-in on your Web-server Macintosh. The plug-ins manage the communications between FileMaker and the Web-server software, moving information from your database to a user's Web browser. Although Web FM and Tango for FileMaker are both basically server-software plug-ins — Tango also includes a CGI (Common Gateway Interface) version, for use with server software that doesn't support plug-ins — the two applications use markedly different approaches to building FileMaker/Web connections. Tango includes a graphical development environment, in which you create pages and forms by clicking and dragging your way around within a series of windows and tabs. In Web FM, you build HTML search pages by adding calculation fields to your FileMaker database. To do the latter, you'll need a basic understanding of FileMaker calculations and a Web authoring application, from which you will paste HTML code into the FileMaker calculation fields.

If you're thinking that the choice between Tango 2.1.1's friendly face and Web FM 3.0's lines of code is a no-brainer, think twice. For your trouble, Web FM offers powerful integration between Web and database, including support for such FileMaker essentials as repeating fields and database relationships. Tango doesn't.

Tango *does* provide you with control over practically every aspect of your data that you'll ever need in order to put your FileMaker database on the Web, but with WebFM, you can forget the "practically."

The Bottom Line Tango for FileMaker 2.1.1 and Web FM 3.0 are both superb database-connectivity tools. Choose Tango if you're an HTML or FileMaker novice — or if you simply prefer an intuitive Mac interface. Web FM is the better choice if you want complete control of your database projects or if you need to bring lots of FileMaker-specific features to the Web. · *Shelly Brisbin*

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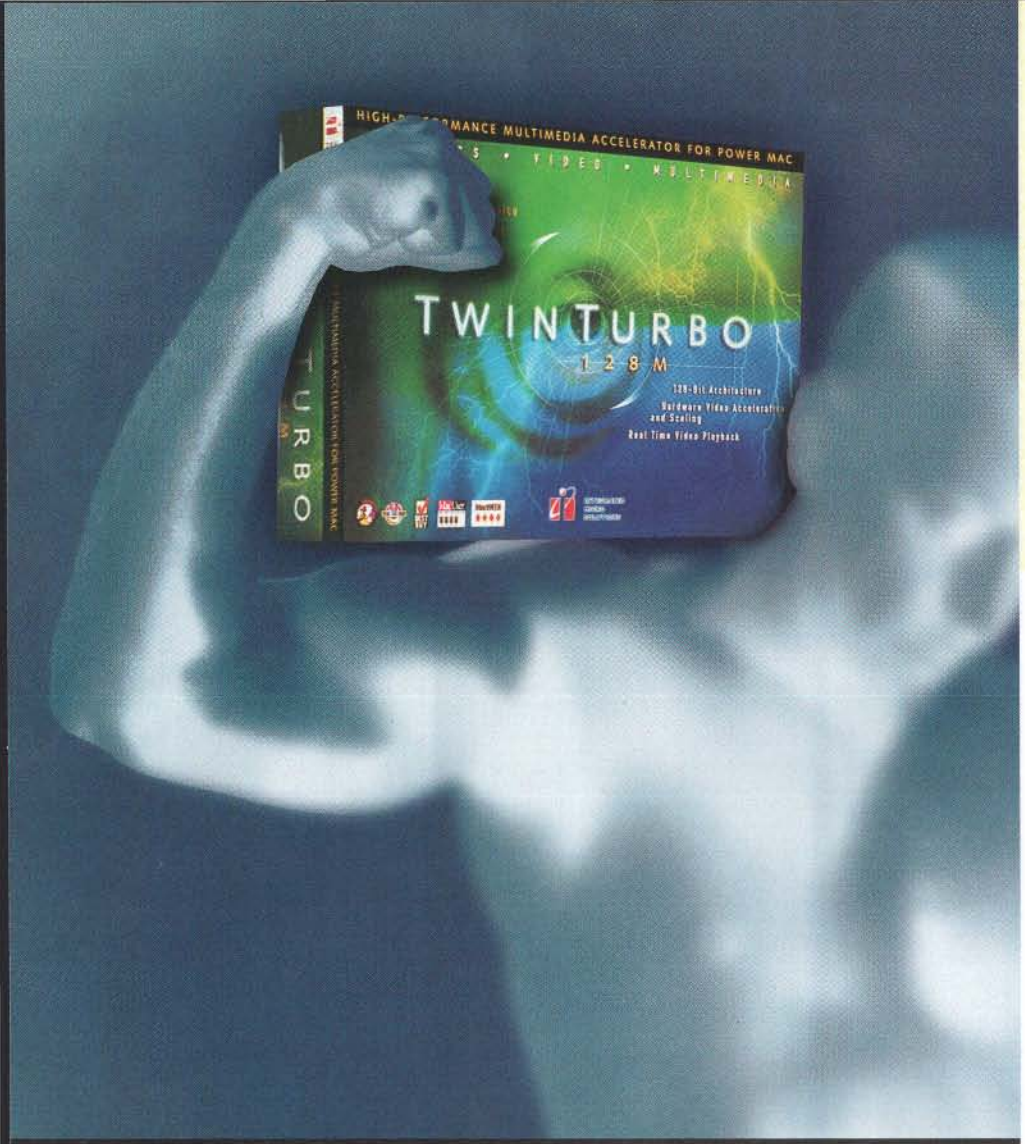

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Tilt 1.0
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www.cognicon.com
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Tilt 1.0

$499 *(list)*

3½

Adobe After Effects plug-in eases 3-D but has its quirks.

THE FIRST IN A WAVE OF PLUG-IN packages that allow 3-D rendering directly within Adobe After Effects, Cognicon's Tilt 1.0 uses QuickDraw 3D to render 3DMF files and supports plug-in renderers, multiple models, cameras, and lights. Parameters such as position, orientation, and lighting are implemented as standard effect controls in After Effects' interface.

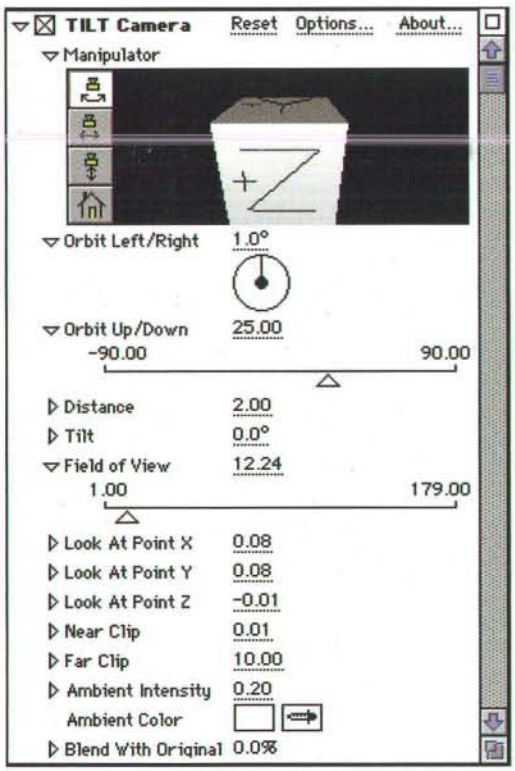
Tilt is seven plug-ins that offer interactive visual feedback. The Camera filter uses QuickDraw 3D to render every effect on each layer. A real boon is Tilt's support of other QuickDraw 3D plug-in renderers that add distinctive styles. For example, Tilt supports LiveStyles, from ThinkFish Productions, which adds natural-media art and cartoon looks, and LightWork Design's SuperLite, which adds better antialiasing, soft shadows, transparency, and accurate lighting effects.

Three of Tilt's filters provide light sources: Far Light, which provides sunlight; Point Light, which simulates lightbulbs; and Spot Light. You can set lights' position, color, intensity, and attenuation values. There are three object filters, for models; for primitives, such as texturable planes, cubes, and spheres; and for displacement objects. The unique displacement filter creates an interpolated 3-D mesh from a 2-D layer.

Tilt has niggling little problems typical of version 1.0 products and has a big RAM appetite. Tilt can lose track of model locations in low-memory situations — images may disappear from the Comp window. Setting up scenes isn't always a snap, since there are no standard *x*, *y*, *z* coordinates. Other drawbacks include problems with pasting effects and keyframes, difficulties in setting and locking quality modes, the absence of bump maps, the lack of Bézier controls for parameters in layer windows, and inexact duplication of comps.

Tilt requires Adobe After Effects 3.1.1 or later, Mac OS 7.5.1 or later, a PowerPC-based Mac, 32 MB of RAM, and a 16- or 24-bit-color display.

The Bottom Line Tilt makes 3-D work fast and easy, allowing After Effects users to edit objects and lighting with quick visual feedback and a familiar, powerful interface. But its price, quirks, and RAM requirements may be deterrents. · *Rich Young*



Tilt embeds Manipulator miniwindows in Adobe After Effects' Effects Control windows. In these miniwindows, you can make changes in real time — a unique capability that makes creating 3-D content fast and easy.

This window shows Tilt's Camera filter. The Manipulator miniwindow lets you use the mouse to position objects. You can also set a broad range of properties of the virtual camera, such as the look-at point, near and far clip points, field-of-view angle, and ambient-light intensity and color.

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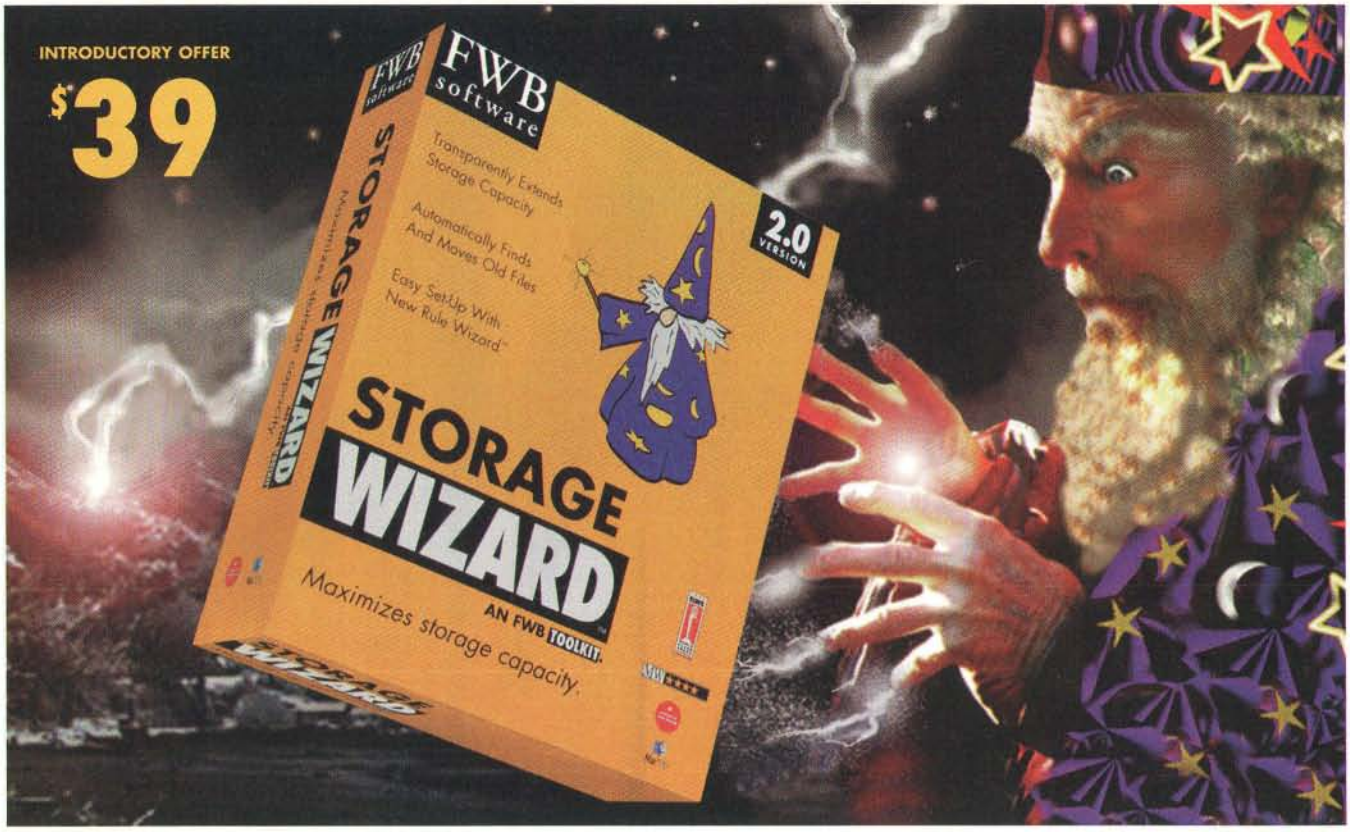

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UMAX Mirage II ★★★½

$7,995 *(list)*

Pro flatbed scanner still lacks essential software tools.

MacUser LABS **INCREMENTAL IMPROVEMENT** is sufficient only when what you're improving on was pretty darn good to begin with — and that's not the case with the UMAX Mirage II. Based on the UMAX Mirage D16-L (see "The Big Picture," July '96, page 80), the Mirage II color flatbed scanner has several evolutionary changes, but there's still room for improvement.

The Mirage II has a transparency cover and several masks for mounting transparencies of different sizes on its 11-x-17-inch bed. The scanner uses a two-lens arrangement, so when you're scanning at the highest optical resolution, 1,400 x 1,400 dpi, your scanning area is restricted to a five-inch strip running down the center of the scanning bed. If you scan across the entire scanning bed, the maximum optical resolution will be 700 x 700 dpi.

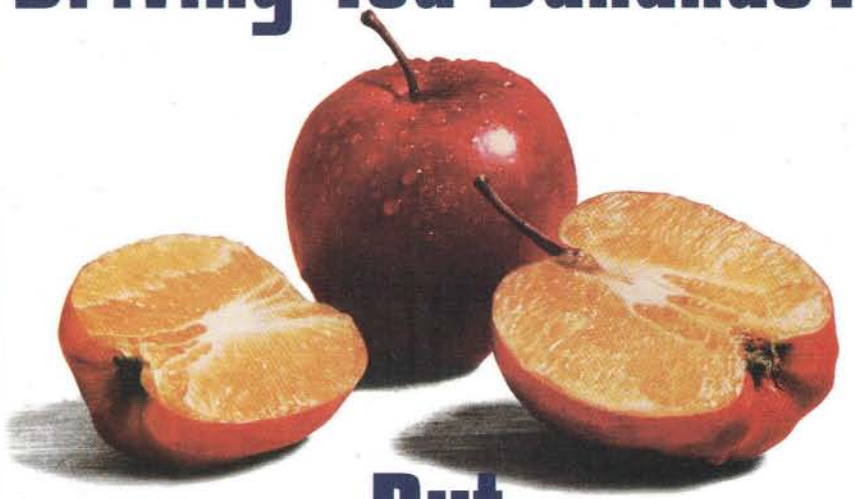
The latest revision of UMAX's acquisition software, MagicScan 3.1, shows some interface and tool-set improvements. The images we scanned demonstrated color-saturation and accuracy improvements — but severe edge aliasing remains.

MagicScan 3.1 needs improvement in its unsharp-masking, levels, and curves algorithms. Although scanned images do not exhibit the same noise levels as with previous versions of the software, version 3.1 has problems generating effective corrections in the prescan, where they would contribute to an even better final scan.

The Bottom Line The UMAX Mirage II is an improvement over the UMAX D16-L, but UMAX needs to add better correction tools to MagicScan and to address its noticeable aliasing problems. · *Rick Oldano*

Photography · Mario Parnell

PC Applications Driving You Bananas?



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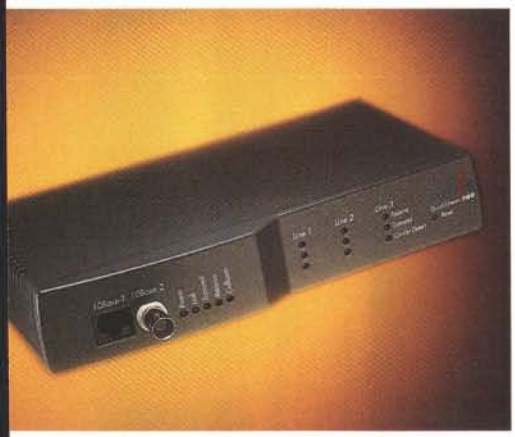
Sonic Systems QuickStream Pro ★★★★½

$999 *(list)*

Remote-access server offers universal access and ease of use in one affordable package.

If the only thing you want to do is allow remote connections to an AppleTalk network, an Apple Remote Access server will fill the bill. However, an ARA server usually can't cut it when it comes to Internet access or PC remote access. Fortunately, Sonic Systems' QuickStream Pro remote-access server not only solves this dilemma but it also does it well. The industry-standard PPP protocol — combined with Sonic's support for the AppleTalk, TCP/IP, and IPX network protocols — will get your remote Macintosh onto the office LAN and onto the Internet as well as provide a remote-access path for users of PCs.



The QuickStream Pro is a three-port server. You can attach a modem to each of the ports and then connect the server to the office LAN via built-in 10BASE-T or ThinNet Ethernet. Telecommuters or PowerBook users dial into the server, using PPP client software such as FreePPP or Sonic's own included PPP client software. Once they're connected to the server, remote users are able to mount AppleShare volumes or employ other AppleTalk services just as they would if they were using ARA.

If your network is connected to the Internet, remote users will be able to surf the Web or use other TCP/IP services (such as mail and FTP) while connected.

You administer the QuickStream from within a Web browser, setting access privileges and modem and network parameters. This means the server administrator can work from a Mac or a PC and can even be a remote user. Web-based administration is both convenient and flexible. With only a few clicks, you can configure ports, protocols, and user accounts, and you can back up these settings by exporting them to a file on your hard-disk drive.

The only complaint we have about the QuickStream administration scheme is that it suffers from a lack of navigation tools. Pages that control configuration changes ought to have buttons that lead you back to previous or subsequent screens.

The Bottom Line The QuickStream Pro is inexpensive, simple to configure, and universally accessible. Small and medium-sized offices with remote-access needs should give it a serious look — and have their checkbooks ready when they do. · *Shelly Brisbin*

Photography · Mike Falconer

Kodak DC120 Zoom Digital Camera ★★★★

$999 *(estimated street)*

Digital camera offers a truckload of features and megapixel quality at a bargain price.

MacUser LABS **Digital-photography** pioneer Kodak has given the fast-moving digital-imaging market many of its firsts: the first widely used professional digital cameras (based on designs from Nikon and Canon) and the consumer-level DC20, DC40, and DC50. With the introduction of the DC120 Zoom Digital Camera, Kodak has now released the first camera that provides megapixel quality and many popular features — such as auto and manual exposure, removable memory cards, automatic flash, and multiple compression options — all at an affordable price.

Besides being feature-rich, the DC120 — which is capable of generating images with resolutions of up to 1,280 x 960 pixels — is one of the handful of megapixel cameras that's available for less than $2,000, and the only one for less than $1,000. It's more than a bargain — it's a steal.

The DC120 comes with 2 MB of built-in memory and the option of plugging in either $99 2-MB or $249 10-MB CompactFlash cards. The lens is a 3-to-1 optical zoom, and images captured in the camera or on the optional card can be displayed on the built-in LCD display singly or as up to nine thumbnails.

Of all the Kodak digital cameras, the DC120 uses the simplest method of getting good images captured and onto your computer. The owner's manual is first-class; it quickly and efficiently lays out all of the camera's options as well as the controls for moving from one option to another.

The images captured by the DC120 show less evidence of the "Christmas-tree light" artifacts that tend to plague images from most other Kodak cameras. The DC120's images are relatively free of any artifacts, for that matter, and they are also less noisy than those from previous comparably priced digital cameras. When printed, the images are sharp and show good color.

The Bottom Line The Kodak DC120 Zoom Digital Camera is Kodak's best effort to date for the high end of the consumer digital-camera market. If you don't mind the lack of a new design for the body (the body has essentially the same design as that of the Kodak DC50), it can provide you with most of the tools and options you'll ever need. · *Rick Oldano*

Photography · Pavlina Eccless

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© ATI Technologies Inc., 1997. ATI, Xclaim VR and Now You See It are trademarks and/or registered trademarks of ATI Technologies Inc. All other product names are trademarks and/or registered trademarks of their respective owners. *Suggested (SU.S) retail price for 2MB upgradeable version.

COMPUTER City 1-800-The City

CDW 1-800-363-4239

MICRO CENTER

MacWAREHOUSE 1-800-255-6227

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Extensis PageTools 2.0

★★★★

$99 *(estimated street)*
Extensis, Portland, OR
800-796-9798 or 503-274-2020
www.extensis.com
Reader service: circle #420

A WORTHY COMPANION to PageMaker versions 5.0 through 6.5, Extensis PageTools 2.0 is a set of plug-ins that add much-needed features. Among the best is PageCounter, which performs more-informative word counts than PageMaker's own counter. For example, nonprinting words, overset words, and words on the pasteboard can all be counted.

Another winner is PageMarks, which facilitates the placement of crop and registration marks and grayscale-density bars on documents that have unusual trims or folds, and PageType, which works like faceIT in QuarkXPress, allowing you to apply styles at the character level instead of having to duplicate them manually.

PageTabs manages tab settings independently of paragraph styles, and PageGlossary provides auto-entry of oft repeated text. Least impressive is PageCaps, which merely adds random capitalization to text. · *Mark Baard*

SmartSound for Multimedia 1.5.1

★★★½

$179 *(list)*; upgrade from version 1.0, $35
Sonic Desktop Software
Chatsworth, CA
800-454-1900 or 818-718-9999
www.sonicdesktop.com
Reader service: circle #421

SMARTSOUND FOR MULTIMEDIA 1.5.1 isn't merely smart; it's positively brilliant. This powerful multimedia sound editor (an upgrade from the original version, which we reviewed in October '96, page 58) now has the ability to import QuickTime movies and MIDI files, to loop soundtracks so they run continuously, to record from a mic or other sound source, and

to overdub. SmartSound's Maestro component first queries you about your production and then delivers a final soundtrack made to your specifications. You can then fine-tune your production with SmartSound Editor. The Randomize preference helps deliver professional-grade soundtracks — even if you're not a virtuoso composer. · *Gene Steinberg*

Epson Stylus Photo

★★★★

$499 *(estimated street)*
Epson America, Torrance, CA
800-463-7766 or 310-782-0770
www.epson.com
Reader service: circle #422

AS ITS NAME IMPLIES, Epson's new Stylus Photo is designed specifically for printing photo-realistic images. Using a unique process involving six inks (cyan, kinda-cyan, magenta, kinda-magenta, yellow, and black), the Stylus Photo produces crisp, highly detailed images that rival those produced by dye-sub printers 10 to 20 times as expensive.

This compact desktop printer's phenomenal output quality has its drawbacks, however: Like most serial inkjet printers, it's no speed demon, and its driver software — although full-featured — is less

than bulletproof. But if your work involves printing images rather than spreadsheets or text documents, you can't buy a better printer at anywhere near the price. · *Rik Myslewski*

StyleScript 3.5

★★★★½

$149 *(list)*
Infowave Wireless Messaging
Burnaby, BC, Canada
800-663-6222 or 604-473-3600
www.gdt.com
Reader service: circle #423

IF YOU WANT POSTSCRIPT quality or the ability to print EPS files from your Apple StyleWriter, Hewlett-Packard DeskWriter/DeskJet, or Epson Color Stylus 500, you need StyleScript 3.5, a software-based Adobe PostScript Level 2 interpreter that provides PostScript power to most inkjet printers.

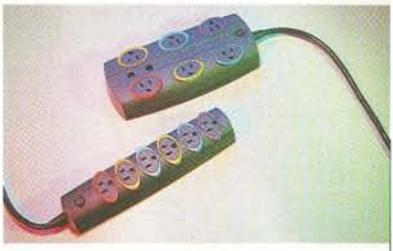
After a simple setup procedure, you never even know StyleScript's there: It automatically launches in the background, processes the print job on your Macintosh, and then quits. The only drawback — and it's a small one — is that StyleScript slows your Mac if you're running another application in the foreground. But this minor inconvenience is worth it: StyleScript 3.5 works flawlessly with EPS files and generates great-looking PostScript output. · *Roman Loyola*

Kensington SmartSockets Strip Model and Adapter Model

★★★★

$19 and $50 *(estimated street)*
Kensington, San Mateo, CA
800-535-4242 or 415-572-2700
www.kensington.com
Reader service: circle #424

A SEXY SURGE PROTECTOR may seem an impossibility, but two new Kensington SmartSockets come close to making it a reality. The Strip Model is merely a straightforward power strip —



Photography · Lon Clark

albeit an exceptionally well-designed one; the Adapter Model, on the other hand, can protect against nearly three times the surge energy and has extrawide outlet spacing that accommodates up to six AC adapters. Each model also protects one telephone, modem, or fax-machine line. The flashy design is not just for looks, either: Included are six pairs of labels that match the colored rings around each socket. Put one label on each peripheral and a matching one on its power cord, and you'll never unplug the wrong device again. · *LaMont Ridgell*

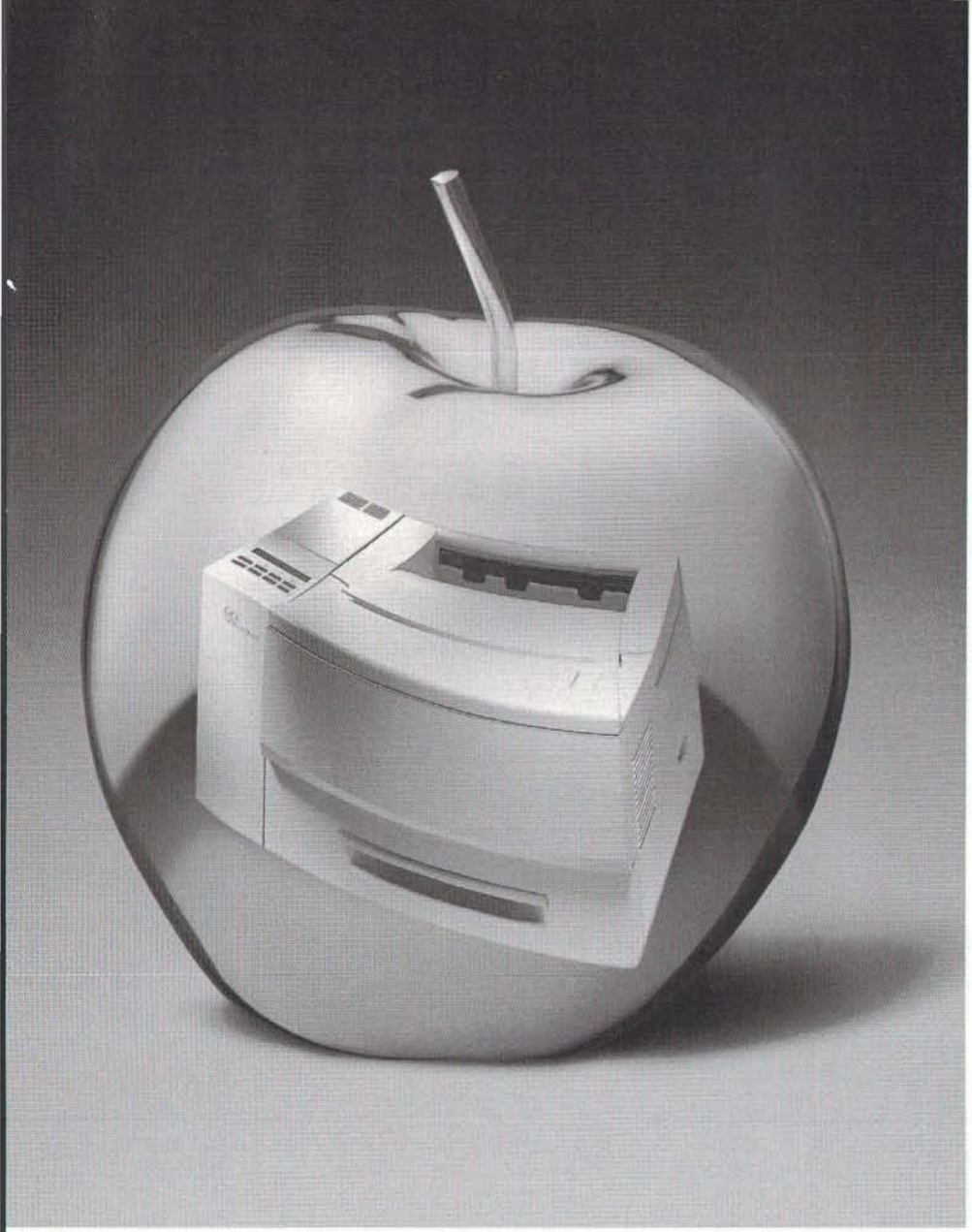
Disney's Magic Artist

★★★★½

$35 *(estimated street)*
Disney Interactive, Burbank, CA
800-900-9234 or 818-543-4300
www.disney.com
Reader service: circle #425

FINALLY, THERE'S A Disney CD-ROM that's not tied to a recent movie — and it's the company's best kids software yet. Magic Artist features so many painting activities and tools that even adults will enjoy being creative; Photoshop should have such fun drawing tools as Whipped Cream and Bright confetti. Kids will delight in discovering how to use the very cool Magic Stamp drawer and its more than 300 ready-made images, including familiar Disney characters waiting to be included in a work of art. Ready to look at your work? Select the slide-show feature, which includes transitions and music, or just print the images out, all fridge-ready. · *LaMont Ridgell*

Photography · Mike Falconer



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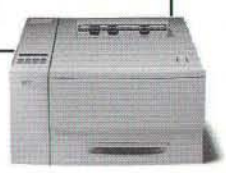

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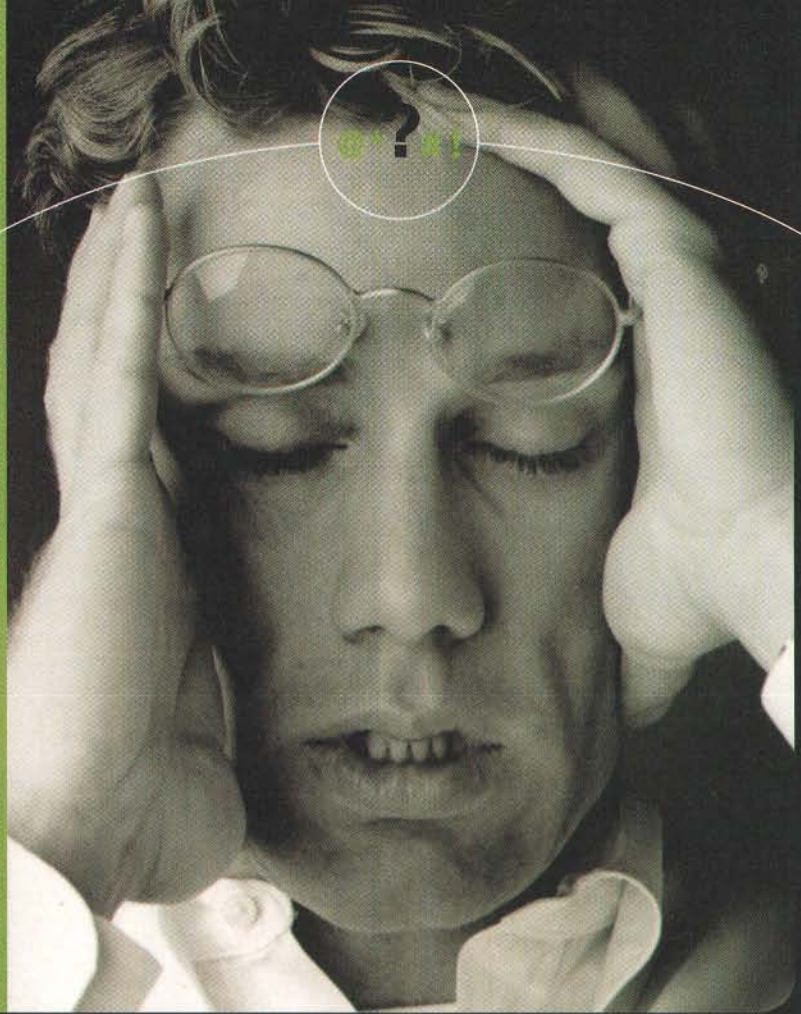

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Our editors recommend these top products, based on reviews published in MacUser.

Hardware

Photography: Michael Falconer

Display	**Multiscan 17seIIT** Sony	You spend more time looking at your monitor than at anything else — it makes sense to invest in the best.	♦♦♦♦½* Dec. '96	$999 estimated street	www.sel.sony.com 800-352-7669
Printer, Color Inkjet	**Stylus Color 800** Epson America	You'll be amazed by the quality of the images produced by this inkjet printer. We were.	♦♦♦♦½ June '97	$449	www.epson.com 800-463-7766
Printer, Laser (Network)	**LaserJet 5Si Mopier** Hewlett-Packard	It collates, staples, duplexes, prints quickly and crisply, and works with PCs and Macs. Retire your copier.	♦♦♦♦½ Sep. '97	$9,143	www.hp.com 800-752-0900
Printer, Laser (Personal)	**LaserJet 6MP** Hewlett-Packard	You could buy a less expensive personal printer but not a better — or better-built — one.	♦♦♦♦ Mar. '97	$1,149	www.hp.com 800-752-0900
Projector, Multimedia	**LitePro 220V** In Focus	Top-notch image quality, muscular sound, and easy-to-use controls vault this projector to the top.	♦♦♦♦½ July '97	$5,499	www.infs.com 800-294-6400
Scanner	**Expression 636** Epson	The latest in Epson's long line of low-cost, high-quality scanners is by far the best.	♦♦♦♦½ Mar. '97	$899 and up	www.epson.com 800-463-7766
Server, Remote-Access	◀ **QuickStream Pro** Sonic Systems	It's easy to configure and manage, and it supports multiple protocols and platforms — all at a bargain price.	♦♦♦♦½ Sep. '97	$999	www.sonicsys.com 800-535-0725
Storage System, Removable-Cartridge	**Zip Drive** Iomega	Today's hefty file sizes have made the Zip the new sneakernet standard. Everyone has one — or will soon.	♦♦♦♦½ July '95	$149 estimated street	www.iomega.com 800-697-8833

Software

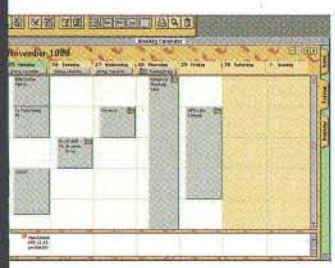

Chart Creator	**DeltaGraph 4.0** DeltaPoint	If you've ever wrestled with Excel's clumsy charting functions, treat yourself to versatile DeltaGraph.	♦♦♦♦½ Jan. '97	$195	www.deltapoint.com 800-446-6955
Database Tool, Application-Development	**4th Dimension v.6** ACI US	For years, this powerful database-development tool has been saving smart businesses cold, hard cash.	♦♦♦♦½ Sep. '97	$299	www.acius.com 800-881-3466
Database Tool, Business-Productivity	**FileMaker Pro 3.0** Claris	If you quake at the mere mention of "the D word," this easy-to-use database tool will calm your fears.	♦♦♦♦½ May '96	$199	www.claris.com 800-544-8554
Network Manager	**Skyline/Satellite 1.2** The AG Group	Want to know everything about your network traffic? Want to know it all right now? Install this package.	♦♦♦♦½† Mar. '97	$795	www.aggroup.com 800-466-2447
Personal Finance Manager	**Quicken Deluxe 7.0** Intuit	Powerful enough to manage SOHO businesses, this software can put you back in charge of your money.	♦♦♦♦½ Jan. '97	$59	www.intuit.com 800-446-8848
Personal Information Manager	◀ **Claris Organizer 2.0** Claris	Never miss an appointment, with this attractive, versatile, and fully cross-referenced PIM.	♦♦♦♦ Mar. '97	$69	www.claris.com 800-544-8554
Presentation Creator	**Adobe Persuasion 4.0** Adobe	PowerPoint may be easier to use, and Astound may be flashier, but the overall winner is still Persuasion.	♦♦♦♦ Mar. '97	$395	www.adobe.com 800-685-3505
System-Software Enhancer	**RAM Doubler 2** Connectix	Sure, RAM is cheap these days. So buy a ton of it — then double it all with this miraculous utility.	♦♦♦♦♦ Dec. '96	$99	www.connectix.com 800-950-5880

*Rating is for previous equivalent model, the Multiscan 17seII.

†Rating is for previous version, Skyline/Satellite 1.1.

All prices are suggested retail (list) unless otherwise noted.

MacUser's CPU Report Cards
Find MacBench scores, mouse ratings, and detailed information for shipping Mac OS models at www.macuser.com/cpu

MacUser Report Cards Mac OS Systems

A comprehensive list of every Mac OS system on the market

Get ready for the cache economy. Till now, Mac OS-system vendors have distinguished their products by delivering faster processors, faster system buses, and larger L2 caches. But that was last year's story. This year, the Hot New Thing is innovative cache *architectures.*

UMAX is the first to enter the fray with a cache technology it calls CacheDoubler. No, this isn't bundled software from Connectix — CacheDoubler is a feature of UMAX's new SuperMac C600x/280 and C600x/240 systems and is UMAX's designation for what is generically known as an *inline* cache. By implementing an inline cache, UMAX has doubled the speed at which a C600x's processor can access data in its L2 cache. Historically, the speed of C600 systems has been somewhat constrained by their relatively slow system buses, which run at 40 MHz. With CacheDoubler, the processor in a C600x can scarf up data from its L2 cache at 80 MHz. The impact of this improvement, in combination with the increased size of the L2 caches in C600x systems, is astonishing: A standard C600/240 with a 256K L2 cache earns a MacBench 4.0 Processor score of 299; a C600x/240 with a 1-MB L2 cache and CacheDoubler technology turns in a score of 481 on the same test. Not too shabby for an under-$2,000 system.

In other news, we have now tested UMAX's under-$1,000 offering, the SuperMac C500LT/180, and pronounce it a winner. Not the greatest bundle in the world — hence the LT designation — but solid performance and a price that, literally, can't be beat.

And in case you're wondering why the MacBench 4.0 Processor score for the Apple Power Macintosh 6500/225 has gone up since last month, some of the early units of this model Apple shipped, including the one we received, had a defective L2 cache that Apple turned off with a cache-disabling extension. The second unit Apple shipped us had the bug fixed and speed improved. (If you were an early 6500/225 customer, you might want to see whether your system has a similar problem and, if so, ask Apple to exchange it.) · *Henry Bortman*

UMAX's SuperMac C600x/280 (shown) and C600x/240 feature new speed-enhancing CacheDoubler technology.

Apple Computer · 800-538-9696 · www.apple.com

Product name / Processor/clock speed · bus speed/RAM/hard drive/L2 cache	Mouse rating / Date rated	Price / MacBench 4.0 Processor score
Power Macintosh 9600/233 604e/233 · 47MHz/32MB/4GB/512K	★★★★ Aug. '97	$4,200 428
Power Macintosh 9600/200 604e/200 · 50MHz/32MB/3.9GB/512K	★★★★ June '97	$3,700 409
Power Macintosh 8600/200 604e/200 · 50MHz/32MB/2GB/256K	★★★½ Aug. '97	$3,200 318
Power Macintosh 7300/200 604e/200 · 50MHz/32MB/2GB/256K	★★½ Aug. '97	$2,700 358
Power Macintosh 7300/180 604e/180 · 45MHz/16MB/2GB/256K	★★★½ June '97	$2,300 330
Power Macintosh 6500/300 603e/300 · 50MHz/64MB/4GB/512K	★★★★ Aug. '97	$2,999 432
Power Macintosh 6500/275 Creative Studio 603e/275 · 50MHz/32MB/4GB/512K	★★★★½ Aug. '97	$2,999 425
Power Macintosh 6500/250 603e/250 · 50MHz/32MB/4GB/256K	★★★★ Aug. '97	$2,299 336
Power Macintosh 6500/250 Education Series 603e/250 · 50MHz/32MB/3GB/256K	★★★★ Aug. '97	$2,099 332
Power Macintosh 6500/250 Small Business 603e/250 · 50MHz/48MB/4GB/256K	★★★★ Aug. '97	$2,599 332
Power Macintosh 6500/225 603e/225 · 50MHz/32MB/3.5GB/256K	★★★ Sep. '97	$1,999 320
Power Macintosh 6500/225 Education Series 603e/225 · 50MHz/32MB/2GB/256K	★★★½ Sep. '97	$1,799 320
Power Macintosh 4400/200 603e/200 · 40MHz/16MB/2GB/256K	★★½ June '97	$1,700 284
Power Macintosh 4400/200 PC Compatible 603e/200 · 40MHz/32MB/2GB/256K	★★★ Aug. '97	$2,399 284
Power Macintosh 4400/200 Small Business 603e/200 · 40MHz/32MB/2GB/256K	★★★ Aug. '97	$1,799 284
Performa 6400/200 603e/200 · 40MHz/16MB/2.4GB/256K	★★½ Oct. '96	$1,599 258
Performa 6400/180 603e/180 · 40MHz/16MB/1.6GB/none	★★ Oct. '96	$1,399 184
Performa 6360 603e/160 · 40MHz/16MB/1.2GB/none	★★★½ Feb. '97	$1,199 175
PowerBook 3400c/240 603e/240 · 40MHz/16MB/3GB/256K	★★★★ Aug. '97	$6,500 337
PowerBook 3400c/200 603e/200 · 40MHz/16MB/2GB/256K	★★★★½ Apr. '97	$5,500 308
PowerBook 3400c/180 603e/180 · 40MHz/16MB/1.3GB/256K	★★★★½ Apr. '97	$5,000 293
PowerBook 1400c/133 603e/133 · 30MHz/16MB/1GB/128K	★★★★ Aug. '97	$3,199 136
PowerBook 1400cs/117 603e/117 · 33MHz/12MB*/750MB/128K	★★★★ Sep. '97	$1,700 117
PowerBook 1400cs/117 (without CD-ROM) 603e/117 · 33MHz/16MB*/750MB/128K	★★★½ Aug. '97	$2,000 117

*Tested with 32 MB installed.

MacBench 4.0 Processor scores are relative to those of an Apple Power Macintosh 6100/60 with 16 MB of RAM and no L2 cache. This reference system is assigned a score of 100.

All products, configurations, and prices are as of June 9, 1997. Single-processor systems only.

Photography · Steve Underwood

APS TECHNOLOGIES · 800-568-2891 · www.apstech.com

M•POWER 604e200 604e/200 · 40MHz/32MB/3GB/512K	★★★★	AUG. '97	$1,893 **420**
M•POWER 603e240 603e/240 · 40MHz/24MB/2.5GB/512K	★★★½	AUG. '97	$1,721 **375**
M•POWER 603e200 603e/200 · 40MHz/32MB/3GB/512K	★★★½	AUG. '97	$1,484 **314**

MOTOROLA · 800-759-1107 · www.mot.com/computer/starmax

STARMAX 5500/200 604e/200 · 50MHz/32MB/4.3GB/512K		NEW	NA
STARMAX 5000/300 603e/300 · 50MHz/32MB/4.3GB/512K	★★★★½	AUG. '97	$2,899 **552**
STARMAX 5000/275 603e/275 · 50MHz/32MB/4.3GB/512K		NEW	NA
STARMAX 5000/250 603e/250 · 50MHz/32MB/2.5GB/512K		NEW	NA
STARMAX 5000/225 603e/225 · 50MHz/32MB/2.5GB/512K		NEW	NA
STARMAX 4000/200 604e/200 · 40MHz/32MB/2.5GB/512K	★★★½	AUG. '97	$2,699 **421**
STARMAX 4000/200 ENTERPRISE 604e/200 · 40MHz/32MB/4.3GB/512K	★★★★	AUG. '97	$2,899 **421**
STARMAX 4000/160 SOHO 604e/160 · 40MHz/32MB/2.5GB/512K	★★★½	MAR. '97	$1,899 **331**
STARMAX 3000/240 ENTERPRISE 603e/240 · 40MHz/32MB/2.5GB/512K	★★★★½	AUG. '97	$2,499 **376**
STARMAX 3000/240 SOHO 603e/240 · 40MHz/32MB/2.5GB/512K	★★★★½	AUG. '97	$2,299 **376**
STARMAX 3000/200 603e/200 · 40MHz/16MB/1.2GB/256K	★★★	MAR. '97	$1,299 **277**
STARMAX 3000/200 ENTERPRISE 603e/200 · 40MHz/32MB/2.5GB/512K	★★★½	SEP. '97	$1,999 **348**
STARMAX 3000/200 SOHO 603e/200 · 40MHz/32MB/2.5GB/512K	★★★½	AUG. '97	$1,799 **348**

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POWERTOWER PRO 250 604e/250 · 50MHz/32MB/2GB/1MB	★★★★½	AUG. '97	$4,495 **598**
POWERTOWER PRO 225 604e/225 · 45MHz/32MB/2GB/1MB	★★★★	MAR. '97	$3,695 **461**
POWERTOWER PRO 225 RAID 604e/225 · 45MHz/32MB/8GB/1MB	★★★★★	MAR. '97	$6,280 **461**
POWERTOWER PRO 200 604e/200 · 50MHz/16MB/2GB/1MB	★★★½	MAR. '97	$2,695 **452**
POWERTOWER PRO 200 RAID 604e/200 · 50MHz/32MB/8GB/1MB	★★★★★	MAR. '97	$5,780 **451**
POWERCENTER PRO 210 604e/210 · 60MHz/16MB*/2GB/1MB	★★★★½	JULY '97	$2,395 **568**
POWERCENTER PRO 180 604e/180 · 60MHz/16MB*/2GB/1MB	★★★★	JULY '97	$2,095 **528**
POWERCENTER 150 604/150 · 50MHz/16MB/1GB/512K	★★★★	MAR. '97	$1,495 **307**
POWERBASE 240 603e/240 · 40MHz/16MB/1.2GB/256K	★★★★½	MAR. '97	$1,599 **309**
POWERBASE 200 603e/200 · 40MHz/16MB/1.2GB/256K	★★★★	MAR. '97	$1,399 **285**
POWERBASE 180 603e/180 · 40MHz/16MB/1.2GB/256K	★★★★★	MAR. '97	$1,199 **271**

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INFINITI 4200 PRO BUNDLE 604e/200 · 40MHz/32MB/3GB/512K	★★★½	SEP. '97	$2,126 **425**
INFINITI 3200 SMART BUNDLE 603e/200 · 40MHz/16MB*/2GB/256K	★★½	SEP. '97	$1,588 **315**

UMAX COMPUTER · 800-232-8629 · www.supermac.com

SUPERMAC S900/250 604e/250 · 50MHz/32MB/2.1GB/512K	★★★★	AUG. '97	$4,899 **528**
SUPERMAC S900/233 604e/233 · 47MHz/32MB/2.1GB/512K	★★★★	AUG. '97	$3,695 **493**
SUPERMAC S900/200 604e/200 · 50MHz/32MB/2GB/512K	★★★★	JAN. '97	$2,995 **408**
SUPERMAC S900/180 604e/180 · 50MHz/32MB/2GB/512K	★★★	JAN. '97	$2,695 **377**
SUPERMAC J700/180 604e/180 · 50MHz/24MB/2GB/512K	★★★★	MAR. '97	$1,995 **449**
SUPERMAC C600x/280 603e/280 · 40MHz/32MB/4.3GB/1MB	★★★★½	SEP. '97	$2,395 **511**
SUPERMAC C600/240 603e/240 · 40MHz/24MB/2GB/256K	★★★★	FEB. '97	$1,695 **299**
SUPERMAC C600x/240 603e/240 · 40MHz/32MB/3GB/1MB	★★★★½	SEP. '97	$1,995 **481**
SUPERMAC C600/200 603e/200 · 40MHz/16MB/2GB/256K	★★★	MAR. '97	$1,495 **280**
SUPERMAC C600e/200 603e/200 · 40MHz/16MB/2GB/512K		NEW	$1,895
SUPERMAC C600/180 603e/180 · 40MHz/16MB/1.2GB/256K	★★★★	MAR. '97	$1,195 **259**
SUPERMAC C500e/180 603e/180 · 40MHz/16MB/1.2GB/256K	★★★★	SEP. '97	$1,095 **268**
SUPERMAC C500i/180 603e/180 · 40MHz/16MB/1.2GB/256K	★★★★	JUNE '97	$1,095 **268**
SUPERMAC C500LT/180 603e/180 · 40MHz/16MB*/1.2GB/256K	★★★★★	SEP. '97	$945 **300**

PRODUCT NAME PROCESSOR/CLOCK SPEED · BUS SPEED/RAM/HARD DRIVE/L2 CACHE	MOUSE RATING DATE RATED	PRICE MACBENCH 4.0 PROCESSOR SCORE

Buyers Guide

MacUser's Mouse Ratings
Search through thousands of reviewed products at www.macuser.com/mouse.html

Affordable Color Printers

The latest color printers for your home or small office

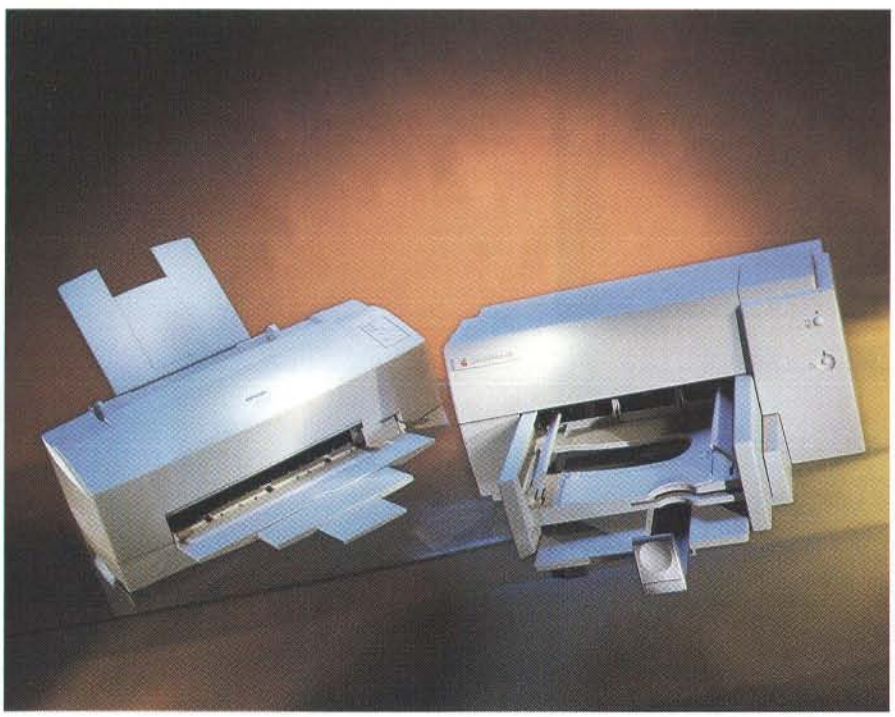
THE DAYS OF INKJET PRINTERS being slow and producing mediocre output are over. Today's models are quick, and the output quality has vastly improved — some produce output that's downright gorgeous.

Downward spiraling prices and improvements in speed and output quality notwithstanding, you still have the chore of pinpointing the right printer. To help you in your search, MacUser Labs tested seven of the latest small-office/home inkjet printers.

Put It on Paper

The Apple Color StyleWriter 4100 and 4500, Hewlett-Packard DeskJet 870Cse, and Canon BJC-4550 printers use thermal technology, with which inks are heated and sprayed onto the page. The Epson Stylus Color 600 and 800 use piezoelectric technology. The Alps MD-2010 uses proprietary Micro Dry technology, with which dry inks are fused onto the paper.

The Epson printers provide the highest resolution — 1,440 x 720 dpi — but this setting can be used only when they're printing on Epson's own inkjet or glossy media. The HP DeskJet 870Cse and the Apple Color StyleWriter 4100 and 4500 (which are based on HP engines) can print up to 600 x 600 dpi. The DeskJet 870Cse also uses HP's C-REt, which helps smooth out lines and fonts. The Canon BJC-4550's maximum resolution is 720 x 360 dpi. The Alps MD-2010 can print in monochrome at 1,200 x 600 dpi and in color at 600 x 600 dpi.



The familiar look of the Apple Color StyleWriter is gone. The Apple Color StyleWriter 4500 (right) is based on an HP engine and, like the Epson Stylus Color 800, prints photograph-like images.

Ink and Paper

Setting up any of the printers is simple. Installing two cartridges (one black; one with cyan, magenta, and yellow) is all it takes to get a printer ready to go, besides connecting it to your Mac. You can't remove the Epson cartridges until you've used all the ink. The Alps printer has four color (cyan, magenta, yellow, and black) ink ribbons, which can be installed in any order.

The Apple Color StyleWriter 4500 and the Canon BJC-4550 also have a photo-grade color ink that replaces the black ink for printing photo-realistic images. Apple includes this ink with the printer, but you have to purchase it separately for the BJC-4550. Photo-realistic images can also be printed on the Epson printers, using Epson's photo-grade paper. For specialty printing, Canon offers a neon-colored ink cartridge and Alps has special metallic-shaded ribbons, for a foil-like effect.

All the printers we tested can print on plain paper, but in order to achieve the highest output quality, you have to use coated inkjet paper — the colors appear more realistic, and the warping effect of the ink on paper is reduced. All the printers in our roundup handle letter- and legal-sized paper, transparencies, and envelopes; only the Canon BJC-4550 handles 11-x-17-inch paper.

Making the Connection

The Apple Color StyleWriters, Canon BJC-4550, Epson Stylus Color printers, and the HP DeskJet 870Cse all use high-speed serial connections. The Alps MD-2010 connects to the Mac through SCSI. The Apple Color StyleWriters and the Epson Stylus Color 800 are the only printers we tested that have an optional Ethernet connector available.

Up to Speed

We tested the printers' speed by connecting each in turn to an Apple Power Mac 7600/132 and printing four real-world test pages. Keep in mind that in these tests, each printer was faster printing on plain copier paper rather than on coated paper.

The HP DeskJet 870Cse took top honors for printing our Word file's text-only pages, with crisp, clear text on both plain and coated paper.

The Epson Stylus Color 800's speed

Photography · Adrian Ordenana

was modest for printing plain text, but the printer was fast for printing our Excel file's mixture of text and simple graphics. The Stylus Color 600, on the other hand, was slow printing text but picked up its pace when printing our Excel business-graphics file. The Epson printers blazed in our graphics-oriented tests; they were among the fastest for printing both the QuarkXPress document and the color-heavy PowerPoint business-presentation transparency.

The Apple printers' speeds were modest for printing on coated paper. On plain paper, each printer's speed for text was far better. The Color StyleWriter 4100 was the slowest for our QuarkXPress test on coated paper and one of the slowest for printing the PowerPoint transparency.

With a monochrome cartridge installed, the Canon BJC-4550 was twice as fast as it was with a color cartridge. We saw no difference in speed for the Alps MD-2010 printing in monochrome on coated paper and on plain paper. The MD-2010 did have problems printing justified margins correctly, a problem confirmed by Alps; a fix is in the works.

Take a Look

To evaluate output quality, we looked at test images on glossy and coated inkjet paper. According to our judges, the winners were the Epson Stylus Color 600 and 800.

The quality these two printers achieve is remarkable. Sharpness and detail in photographs were well preserved, and text produced from these printers was clear and well defined. In our PowerPoint business presentation, the color gradations produced by the Stylus Color 600 were exceptional.

The HP DeskJet 870Cse's output didn't have quite the clarity that the Epson printers displayed, but it was still very good. The images' colors were realistic, and the text was sharp. Not surprisingly, because they use the same engine, the output quality of both Apple StyleWriters looked similar to the DeskJet 870Cse's.

The Canon BJC-4550 had trouble printing a color gradation in our business presentation, showing noticeable "steps." Photographic images were dark, shadow detail was lost, and text had a slightly fuzzy appearance.

The Alps MD-2010's output suffered from banding, and the printer had problems matching colors. Its text quality was excellent, but it went through ink ribbons extraordinarily quickly.

The Bottom Line

If you have been waiting to buy a new printer for your home or small office, wait no longer. For those who are after great graphics output quality, the Epson Color Stylus 800 is a fantastic choice. If you print primarily text documents, you should take a look at the HP DeskJet 870Cse. · *Martin Wong*

Martin Wong is an associate project leader at MacUser Labs.

Directory

Alps Electric
San Jose, CA
800-373-2577
408-432-6000
www.alps.com

Apple Computer
Cupertino, CA
800-767-2775
408-996-1010
www.apple.com

Canon
Costa Mesa, CA
800-423-2366
714-438-3000
www.usa.canon.com

Epson America
Torrance, CA
800-922-8911
310-782-0770
www.epson.com

Hewlett-Packard
Santa Clara, CA
800-527-3753
408-246-4300
www.hp.com

Comparing Inkjet Printers *Specifications and speed*

We're finally able to say the words *fast* and *inkjet printer* in the same sentence. Although these printers won't break any speed records, the improvement over past generations is significant.

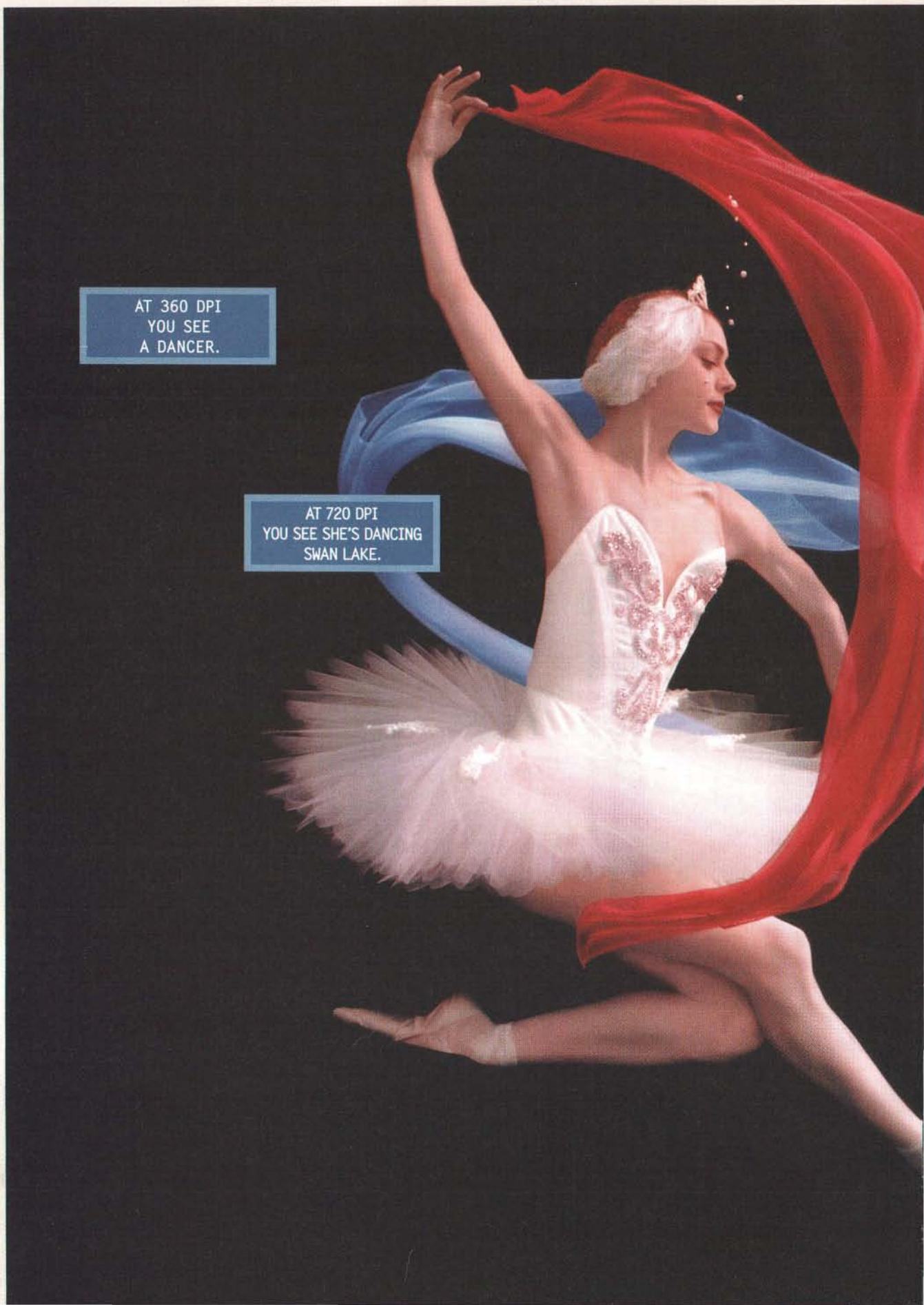
We used four different test documents to gauge the speed of each printer. Each printer was set to best quality, and we used both plain paper and coated paper. We also printed a transparency presentation. Our test platform was a Power Mac 7600/132 running Mac OS 7.6.1.

Rating	Printer	Estimated Street Price	Maximum Resolution	Word (Pages per minute)	Excel (Pages per minute)	QuarkXPress (Pages per minute)	PowerPoint (Pages per minute)
MacUser BEST BUY	Epson Stylus Color 800	$449	1,440 x 720 dpi	1.16 2.21	1.16 1.54	.48 .71	.90
	Apple Color StyleWriter 4500	$329	600 x 600 dpi	1.4 4.51	.62 .62	.11 .28	.21
	Epson Stylus Color 600	$299	1,440 x 720 dpi	.64 1.28	.72 1.03	.24 .48	.53
MacUser BEST BUY	HP DeskJet 870Cse	$499	600 x 600 dpi	5.85 10.34	.88 1.03	.15 .54	.31
	Apple Color StyleWriter 4100	$229	600 x 600 dpi	.69 4.32	.46 .60	.09 .27	.21
	Alps MD-2010	$499	1,200 x 600 dpi	1.45 1.45	.50 .50	.11 .22	.21
	Canon BJC-4550	$499	720 x 360 dpi	1.09 3.94	.34 .42	.12 .30	.22

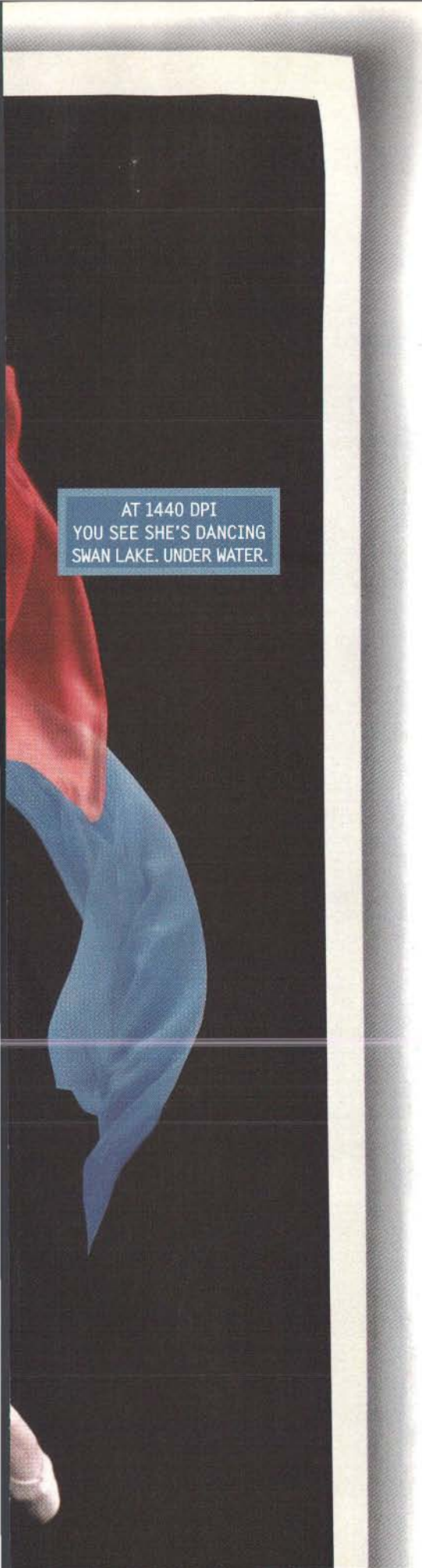
MacUser BEST BUY

Listing is alphabetical within groups of equal mouse ratings.

Best in test · Coated paper · Plain paper · Transparency



National Software Testing Laboratory, Inc. (NSTL) found the EPSON Stylus Color 600 outperforms avg. speeds of the HP DeskJet 694C by 31% and the Canon BJC-4200 by 38%. Print speeds tested with Windows 95 and Microsoft Word, Microsoft Excel, Microsoft PowerPoint, Adobe PageMaker and Adobe Photoshop. Prices may vary.
EPSON and EPSON Stylus are registered trademarks of Seiko Epson Corp. Micro Piezo is a trademark of Epson America, Inc. © 1997 Epson America, Inc.



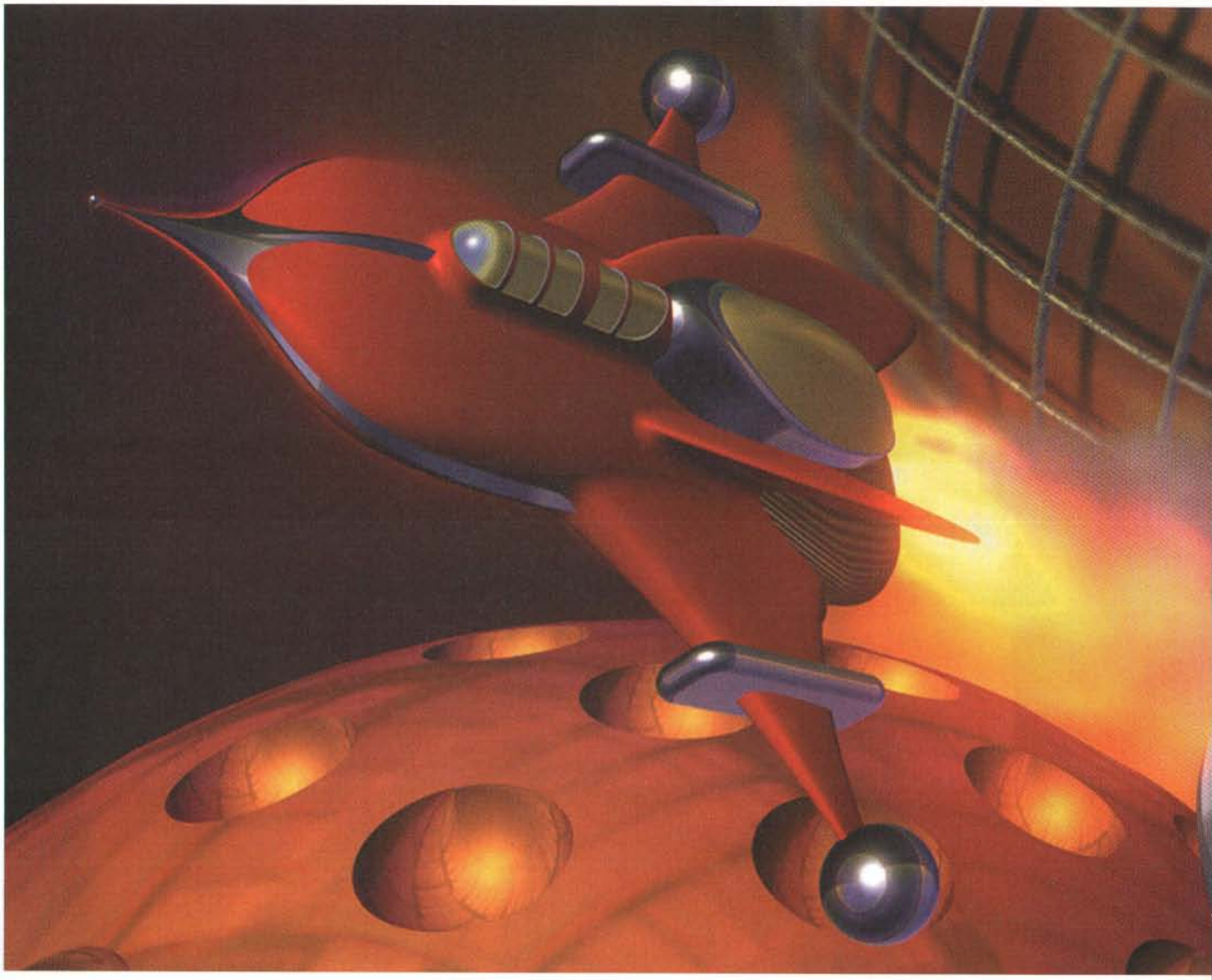
YOU'VE GOT TO SEE IT IN EPSON COLOR.

See the tiny bubbles? So did the new EPSON Stylus® Color 600 ink jet printer. 1440 x 720 dpi. Incredible detail. Brilliant Photo Quality color. Laser-sharp black text. All from our exclusive Micro Piezo™ Technology for a smaller, cleaner, more consistent dot. You'll get award-winning print quality—at overall print speeds 31% faster than any competitor's. With PC and Mac compatibility. Starting around $299. Call 1-800-GO-EPSON and ask for Operator 3010 or visit us at www.epson.com to hear more. And see everything.

INTRODUCING THE WORLD'S FIRST 1440 DPI COLOR INK JET PRINTERS.

EPSON Stylus Color 600 about $299. Photo Quality for home and office.

CIRCLE 123 ON READER SERVICE CARD



POP ART

By David Biedny and Nathan Moody

Are you a 3-D neophyte or a seasoned master? Our tour of the exploding 3-D-art movement has something for everyone.

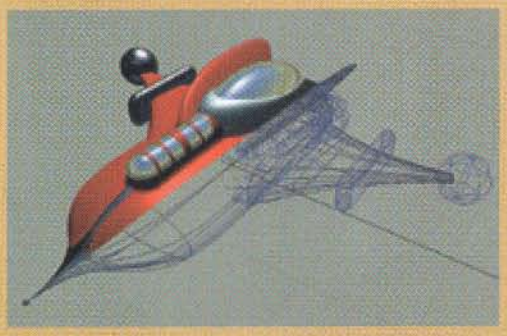
Illustration · Rob Magiera

Pop artists made their careers by putting a fresh spin on everyday items: Andy Warhol elevated soup cans and soap pads to fine art; Roy Lichtenstein put comic-strip illustrations in museums, right alongside the old masters. Today, another art form — digital 3-D modeling and animation — is breathing new life into tired designs, making graphic designs, Web artwork, business communications, and even television and movies pop into three dimensions.

You don't have to be in the avant garde to get in on this new movement: Whether you are designing 3-D animation for Hollywood's latest blockbuster or just want to add some depth to your family Web page, there's a 3-D program that will meet your needs.

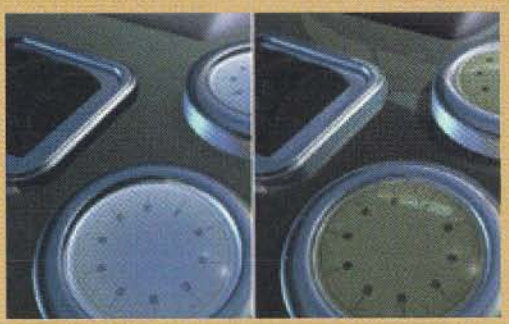
To help you leap to 3-D (or deeper into it), we sifted through 31 programs and evaluated their features, ease of use, output quality, and overall value.

***Booleans** are mathematical operations that allow you to weld solid 3-D objects together and cut shapes out of 3-D objects by employing other 3-D objects.*



***Spline-based modeling** produces smoother, more organic shapes than polygon-based modeling, by defining surfaces with a series of points and flexible curves.*

***Procedural textures,** created with mathematical algorithms unlike simpler 2-D surface-mapped textures, make objects look more realistic, as though cut from solid material.*



***Phong shading** (right) calculates light for pixels on polygon edges and interpolates it across the surface. **Ray tracing** produces more-advanced effects — such as reflection, refraction, and transparency — by calculating light rays through every single pixel.*

What's Out There?

3-D applications can be broken down into two basic sets: integrated and specialized. Integrated packages offer a full set of tools for *modeling* (shaping 3-D objects and combining them in scenes with custom lighting), *rendering* (drawing the final scene at full resolution, often with shadows, reflections, and diffractions calculated from the lighting you specify), and *animation* (making your objects move).

More-specialized programs may incorporate a subset of these basic functions; focus on just one of them; or offer modeling, rendering, and animation optimized for narrow uses such as designing realistic landscapes or lifelike trees.

To help you decide among these varied offerings, we've created a few user categories and matched them to the most-useful 3-D packages, based on functionality, learning curve, and price. Find the user category that describes you most closely, and then consult our table to focus on the products we think will meet your needs. Then read the capsule reviews on the following pages to learn more about the software. If you're still unsure, consider the Best Buy recommendations we've provided in each user category.

Who Are You?

Hobbyist You're very probably a 3-D novice, curious enough about the technology to dabble a bit. You want an integrated program that lets you experiment with modeling, rendering, and animation, but you are primarily concerned with ease of use and low cost. Rendering to film or videotape is not a concern, so low-resolution print or QuickTime-movie output is satisfactory.

Corporate Designer To make business presentations leap off the page or screen, consider using 3-D accents and titles — maybe even animate them for extra pizzazz. You want something reasonably inexpensive you can learn quickly and that can generate impressive 3-D type treatments, flying logos, and so on — for relatively low-resolution output — on an office printer or on a computer monitor.

Multimedia/Web Designer You're a graphics pro used to working with 2-D graphics and animation and are ready to make the jump to 3-D tools. High-quality output and precision animation controls are vital, and your need for these powerful features may outweigh your desire for simplicity. An integrated 3-D package offers you good value and the means to create 3-D objects, from Web-page headers and banners to virtual environments for CD-ROMs or the Web.

Video Producer To generate snazzy 3-D flying-logo sequences for broadcast, your 3-D software must deliver fast, flexible tools and render output that meets television and video color, display, and playback-rate standards. These parameters include field rendering, NTSC-legal frame rates (drop-frame and non-drop-frame) and color, and support for standard video frame sizes (from NTSC to D1 digital).

Industrial Designer Although your work is rarely broadcast or widely distributed in printed form, you are an extremely demanding 3-D user: Because your modeling needs are determined by exacting manufacturing specifications, you need pinpoint numerical accuracy and ultraflexible modeling tools. If your main concern is with ergonomics, you may not need superrealistic ray tracing, but if you're an architect or product designer, you'll want highly realistic rendering for your presentations.

Professional 3-D Artist You are (or aspire to be) part of the growing film genre that relies on computer-generated 3-D models and effects. You need the very best in modeling, animation, and rendering; in fact, the feature sets of many high-end 3-D applications are often based on your needs and suggestions. You require the highest output resolution of any 3-D artist and also demand flexible tools, advanced keyframe-based animation, and lightning-fast rendering.

Which 3-D Application? *Check your category*

Product	Rating	Price
EI Broadcast 2.7.5	●●●●½	$2,495
EIAS 2.7.5	●●●●½	$7,495
Tree EIAS Storm 4.0.5	●●●●½	$695
Tree Professional 4.0	●●●●½	$495
Bryce 2.0	●●●●	$179
Detailer 1.0	●●●●	$299
form•Z 2.9	●●●●	$1,495
Infini-D 3.5	●●●●	$599
LogoMotion 2.0	●●●●	$99
Poser 2.0	●●●●	$139
Ray Dream Studio 4.1.2	●●●●	$299
Cinema 4D 4.2.7	●●●½	$760
PixelPutty Solo 1.5.2	●●●½	$299
Presenter 3D 3.6.3	●●●½	$1,995
Sculpt 3D 4.2	●●●½	$1,495
Tilt 1.0	●●●½	$499
Extreme 3D 2.0	●●●	$399
LightWave 3D 5.0	●●●	$1,495
MacRenderMan/Showplace 1.3.4	●●●	$199
Natural Scene Designer 1.0.3	●●●	$189
3D World 2.0	●●●	$139
Touch-3D 2.0	●●●	$395
Zoom 5.0	●●●	$895
Amapi 3.0.1	●●½	$499
Art•Lantis 2.1.3	●●½	$595
Life Forms 2.0.3	●●½	$299
Type 3D 2.5	●●½	$49
Vision 3D 4.0	●●½	$439
MeshPaint 3D 1.6	●●	$499
StudioPro 2.0.2	●½	$969
3D Dizzy 1.0	●½	$99

MacUser Best Buy

Listing is alphabetical within groups of equal mouse ratings.

The Bottom Line

Hobbyists wanting a big bang for their buck should buy Ray Dream Studio, an integrated package with excellent value and future expandability. Version 5.0 promises to add considerable power to every aspect of the program.

Corporate designers will also be best served if they use Ray Dream Studio as a comprehensive tool. Those needing only 3-D text or flying logos should consider LogoMotion.

for the products designed for you, and read the corresponding capsule reviews for our evaluations.

Product Capabilities			User Profile					
Modeling	Rendering	Animation	Hobbyist	Corporate Designer	Multimedia/ Web Designer	Video Producer	Industrial Designer	Professional 3-D Artist
	●	●				◉	●	◉
	●	●				●	●	◉
*	*	*				●		●
*	*	*				●	●	●
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●	●	●	●	●	●	●		
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*	*	*	●	●	●			

*Specialized product; may do modeling, rendering, and/or animation, but only for a specific purpose.

We advise multimedia/Web designers to use Infini-D; version 4.0, with all of its improvements, is like a new program. Among the easiest to use of the reviewed programs, Infini-D 3.5 offers a healthy combination of special effects and flexible output options.

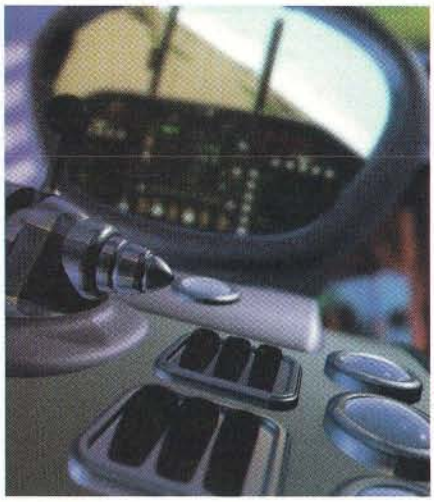
We have two recommendations for video producers, depending on the budget. Those with lower budgets will be best served by Infini-D, especially given its new professional video features. For those who have a bigger budget, we recommend Electric Image Broadcast, state-of-the-art Macintosh 3-D for video output.

For industrial designers needing numerical precision, we recommend form•Z, the strongest modeler of the reviewed products. Presenter 3D and Sculpt 3D are viable alternatives for precision, but form•Z is our top choice.

Professional 3-D artists will be happiest combining the modeling prowess of form•Z with the superior rendering of Electric Image (either Broadcast or the full version, depending on output-resolution needs).

Some neat extras: Bryce is the hands-down winner for realistic landscapes, and Poser does the best virtual-figure creation. Detailer is the best for painting 3-D texture maps, and LogoMotion is the winner for quick and easy flying logos. After Effects artists should definitely look at Tilt for neat 3-D effects.

If you haven't joined the 3-D-art movement yet, now is the perfect time to pop out of your 2-D world. If you're a 3-D pro, maybe a new modeling, rendering, or animation tool will spark your imagination. With a little patience and the right software, you'll be the next big thing in pop art.



Amapi 3.0.1 ♦♦½

Yonowat

Amapi offers powerful modeling tools and extensive 3-D-file-format support, but its rendering and animation facilities are merely mediocre, so learning the arcane, densely iconic interface isn't worthwhile.

PROS: Cross-platform (Windows 95/NT, Mac OS, SGI); robust import/export of most major 3-D file formats; NURBS modeling and free-form deformations; full Boolean operations allow you to add one object's volume to or subtract it from another's; animation tools let you trace motion paths, using Bézier-drawing tools.

CONS: Bizarre interface; buggy; limited Phong rendering; weak animation keyframing; poor documentation.

Art•Lantis 2.1.3 ♦♦½

Abvent

Art•Lantis is a dedicated application for *ray tracing* — a rendering method that projects imaginary light rays backward from the viewer's perspective to generate reflections and shadows. It opens files in the popular DXF format as well as in its own (supported by Zoom and ArchiCAD). Best used for creating architectural and industrial-design illustrations, Art•Lantis is not suited for animation or highly stylized projects.

PROS: Reasonably fast, high-quality rendering; rapid preview updates for color and shader changes; support for virtually limitless numbers of image-map layers; background rendering and batch processing.

CONS: Renders only still images; cannot render soft shadows; image-map importing is problematic.

Bryce 2.0 ♦♦♦♦

MetaCreations

Bryce's wacky interface lets you generate gorgeously rendered 3-D terrains. Best for creating realistic virtual worlds, it's also useful as an overall rendering environment. Still, its lack of animation capabilities and a general-purpose modeler will frustrate 3-D pros.

PROS: Easy-to-use; excellent procedural textures; outstanding rendering quality; decent variety of built-in shapes and objects; very realistic atmospheric effects (the best clouds on the Mac); real-time mesh-painting tools.

CONS: Slow rendering performance; overly complicated procedural-texture interface; no animation; weird general interface.

Cinema 4D 4.2.7 ♦♦♦½

Maxon Computer

A venerable Amiga program new to the Mac OS, this integrated 3-D application has the fastest Mac-based ray tracing of all the products we reviewed — but it needs polish. We're eagerly awaiting the more full-featured version, to be released this fall.

PROS: Cross-platform (Mac OS, Windows 95/NT); blazingly fast ray tracer; relatively low memory requirements; free-form deformations let you "sculpt" objects by pulling and pinching their surfaces; Boolean operations; depth-of-cue blurring (objects are darker the farther they are from the user's point of view); renders soft shadows; skeleton animation and inverse kinematics aid character animation; advanced object-oriented stacking of object/animation parameters.

CONS: Poor interface, especially terrible Boolean controls; substandard documentation; features such as particle systems, multiprocessor support, and NURBS available only in more expensive version shipping later this year.

Detailer 1.0 ♦♦♦♦

MetaCreations

Detailer lets you paint image maps directly onto 3-D objects imported from other modeling programs, using tools and brushes similar to those in MetaCreations' Painter. A bit rough around the edges, it's still a great tool, far superior to its rival, MeshPaint 3D.

PROS: Imports Ray Dream Designer, DXF, and 3DMF files; preserves links within preexisting image maps (but not object linking and hierarchies); uses UV mapping to generate ultrarealistic textures; supports wireframe depth cueing (wire frame is darker the farther it is from the user's point of view); wire frames can be overlaid onto 2-D image maps for easy, on-the-fly reference; 32 levels of Undo (for painting only); supports Adobe Photoshop-compatible filter plug-ins; exports many 2-D file formats, including layered Photoshop files, as texture maps.

CONS: Undo doesn't apply to model editing; significant memory requirements; DXF import of objects can be tricky, depending on original modeler; importing of Detailer-generated textures into 3-D rendering software is poorly documented.

Electric Image Animation System 2.7.5 ♦♦♦♦½
Electric Image Broadcast 2.7.5 ♦♦♦♦½

Electric Image

BEST BUY

Electric Image epitomizes Macintosh rendering and animation sophistication — at a premium price. Its lack of a modeler is more of a nuisance than a serious drawback for its intended users. The high-end version renders at motion-picture resolution (32,000 x 32,000 pixels), and the Broadcast version is limited to video resolutions (although it can render high-resolution still images for print at up to 4,000 x 4,000 pixels).

PROS: Very fast, high-quality rendering; sophisticated animation controls; exceptional motion-blur and soft-shadow quality; detailed rendering feedback; includes rendering engines for unlimited number of machines; multiprocessor support for renderer; many professional capabilities.

CONS: No modeling capabilities (but able to import a wide variety of model file formats); limit of three texture maps per object; requires better procedural textures; high price; hardware copy protection; mediocre documentation.

Extreme 3D 2.0 ♦♦♦

Macromedia

The rendering and animation features in this integrated package are good, but they lag behind its advanced modeling tools

and are likely to frustrate 3-D pros. A good value only when purchased as part of Macromedia's Director Studio or FreeHand Studio bundles.

PROS: Excellent numerical accuracy; professional-quality 2-D drawing/drafting tools; powerful hierarchical linking of objects (including ball and swivel joints); advanced sweeping of 2-D shapes for lofted 3-D objects; organic Dust mode, for adding depth to lighting effects; good particles and MetaBalls implementation.

CONS: PowerPC-only; texture handling needs improvement; less intuitive than competing programs; certain functions buggy; lacks advanced animation controls.

form•Z 2.9 ♦♦♦♦

*auto*des*sys*

BEST BUY The ultimate 3-D modeler for the Mac, form•Z is *the* choice for many 3-D artists, architects, and designers. Often used with Electric Image, form•Z is an application whose intricacy is reflected in its steep learning curve.

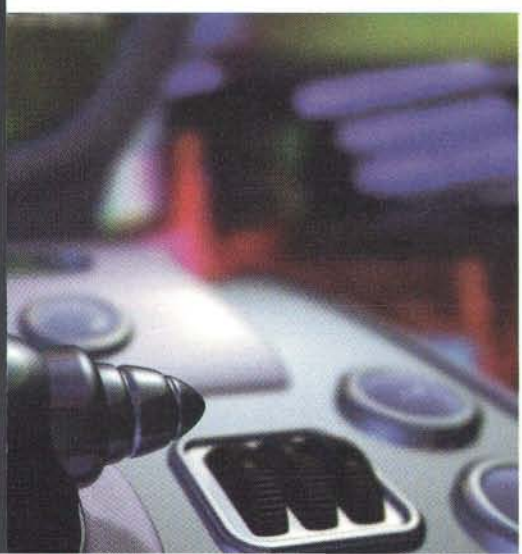
PROS: Robust range of modeling methods (handles lines, polygons, NURBS, B-splines, and Bézier curves); unlimited levels of Undo; stable, accurate Boolean operations; unique derivative-modeling tools reproduce any shape already in the scene, whatever the volume, curve, or polygon; allows up to three macros of unlimited length; RenderZone version ($500) adds a rendering engine and a surface editor; good documentation.

CONS: Complicated interface with a steep learning curve; no animation capabilities; needs a separate dedicated renderer.

Infini-D 3.5 ♦♦♦♦

MetaCreations

BEST BUY The leader in lower-cost, integrated 3-D packages, Infini-D balances ease of use, powerful features, and reasonably high-quality output. Great for print designers and artists new to 3-D design, it offers lots of room to grow. Animators will appreciate new 4.0 features we've previewed but will bemoan the lack of inverse kinematics, for uses such as character animation. Professional 3-D artists will want higher-end modeling tools.



PROS: Easy to learn and use; wide range of modeling tools; intuitive parent-child linking hierarchies; keyframe-based animation system with nonlinear velocity interpolation; unlimited texture layering; volumetric lights and customizable lens flares; support for many third-party Photoshop and After Effects filters; Shadow Catcher objects assist in compositing 3-D objects into 2-D images.

CONS: Slow rendering speed; Boolean operations affect rendering only (they don't create new geometry); poor velocity-curve animation controls.

Life Forms 2.0.3 ♦♦½

Credo Multimedia

Life Forms was designed specifically for choreography. If you want to simulate or visualize human motion but don't need to model or render realistic human figures, then it's a useful tool. Since it focuses on figure motion and not detailed physical attributes, it's less useful for more-general tasks.

PROS: Motion palettes store frequently used sequences; displays ghosted adjacent frames of motion trails; you can use text notes to tag keyframes; Paste Special command pastes shapes, locations, attitudes, facings, and notes from one keyframe to another; Pin to Floor command keeps model's feet in contact with the ground plane; rendering (PICS, PICT, or QuickTime) is quite fast.

CONS: Poor rendering quality, limited to abstract wire frames or bounding boxes; no realistic limb constraints; no real-time, interactive previews while rotating or zooming; not QuickDraw 3D-capable; animations can be exported only as scripts, which no other Macintosh 3-D program can easily translate; outdated animation/timeline palette.

LightWave 3D 5.0 ♦♦♦

NewTek

Originally part of NewTek's Video Toaster package, popular on the Amiga and Windows platforms, LightWave 3D is new to the Mac. It's really a set of two programs: Modeler, for object creation, and LightWave (also called Layout), for scene creation, rendering, and animation. Unfortunately, the Mac version isn't up to par with the other platforms' versions. NewTek's upcoming version 5.5 will hopefully address the Mac version's shortcomings.

PROS: Fast, interruptible object redraw; 15 levels of Undo; high degree of control over object tessellation (object and polygon subdivision), numeric transformations, and point-, polygon-, and object-level editing; MetaNurbs and MetaBalls modeling; layer-based object handling; inverse kinematics, with skeleton animation and muscle flexing; full-featured Boolean operations; robust motion graphs; video features such as data overlay and alpha-channel compositing; optional ScreamerNet add-on allows up to 1,000 multiplatform dedicated rendering CPUs.

CONS: Not consistent with Mac OS interface conventions; layout timeline isn't time-scalable, so you can't zoom in on crucial keyframes; ScreamerNet doesn't ship with Mac OS version.

LogoMotion 2.0 ♦♦♦♦

MetaCreations

LogoMotion makes it easy to create animated flying logos. It models, renders, and animates 3-D type and 2-D EPS shapes. If you're looking for easy-to-do animated type effects, look no further than LogoMotion.

PROS: Editable StageHands (automated templates for animation, textures, and lighting); importing of EPS illustration files; very usable lighting defaults; intuitive timeline interface; good atmospheric controls.

CONS: Rendering quality and speed need improvement; no support for QuickDraw 3D for previews.

MacRenderMan/Showplace 1.3.4 ♦♦♦

The Valis Group

Originally developed by Pixar, MacRenderMan is a stand-alone rendering engine and Showplace is a setup environment. As proven by the success of *Toy Story*, RenderMan is still a viable technology and its rendering quality is exceptional. This Valis bundle is a good introduction for aspiring RenderMan students, but we find it hard to recommend as a general-purpose 3-D solution.

Go to www.macuser.com/bookmarks

for one-click access to sites related to 3-D, such as:

Apple QuickDraw 3D Home Page
Find developer news, technology discussions, free software downloads, free 3-D clip art, and more.
quickdraw3d.apple.com

3-D Glossary
Learn the real meaning of those confusing 3-D terms.
devworld.apple.com/dev/techsupport/insidemac/QuickDraw3D/QuickDraw3D-1301.html

3D Animation Workshop
Access basic instructions for creating 3-D animations for your Web page.
www.webreference.com/3d

PROS: Excellent rendering quality; decent rendering performance; Glimpse application (included) makes shader editing straightforward; shaders are attractive and useful.

CONS: No modeling or animation tools; quirky, icon-heavy interface; MacRenderMan only a subset of full RenderMan, which is not available on the Macintosh; Chooser-level driver for rendering confusing for new users; continued development for the program is unlikely.

MeshPaint 3D 1.6 ♦♦

Positron

This is a rather depressing attempt at a Mac 3-D painting program. PC origins are evident in this hasty port, and with MetaCreations Detailer available as an alternative, we see no reason to buy this package.

PROS: Supports Electric Image and 3DMF file formats.

CONS: Poor brush set; unintuitive interface; no real-time feedback between 3-D preview window and 2-D painting windows; no support for DXF files; poor documentation.

Natural Scene Designer 1.0.3 ♦♦♦

Natural Graphics

Formerly Scenery Animator, this program specializes in scenery modeling and rendering. You can create scenery from scratch, import 3DMF files, or use included U.S. Geological Survey Digital Elevation Models (DEMs). Modeling is limited, so Natural Scene Designer is best used to read, render, and fly through terrain from real geological data. For anything more creative, Bryce is a better bet.

PROS: Ray tracing and performance improved from previous version; realistic trees; animation-capable, multilevel clouds; landscape geometry can be exported into other 3-D applications; good tutorials, sample objects, and USGS terrain data.

CONS: Can't Undo trees added to a scene; only four types of trees, which can't be exported as independent models; Undo on camera keyframing may produce unwanted keyframes; only one light source (the sun); only the camera can be animated, and animations are sometimes imprecise.

PixelPutty Solo 1.5.2 ♦♦♦½

The Valis Group

A compelling modeling/animation program for the workstation crowd, PixelPutty is decidedly non-Mac-like, but if you do character animation, you should consider it. It offers pro-caliber modeling, powerful procedural textures, and high-quality rendering (new in version 2.0).

PROS: Strong spline-based modeling and object deformation; fast performance; good animation controls; incredibly powerful, flexible procedural-texture generator; good inverse kinematics.

CONS: Deficient timeline editor; velocity-curve controls awkwardly separate from timeline; interface geared toward advanced users; no field rendering for professional-video use; Boolean operations affect rendering only (they don't create new geometry).

Poser 2.0 ♦♦♦♦

MetaCreations

This program is great at animating realistic 3-D human figures. Although its animation and rendering don't match those of high-end, general-purpose 3-D packages, its specialized controls make it perfect for generating exportable models and rough drafts of cavorting figures.

PROS: Ships with human models, including clothed figures, with accurately rendered muscles and joints; limbs and body parts move appropriately; texture maps enhance figures and surfaces; vanishing points and perspective lines help you align figures to imported backgrounds.

CONS: Keyframe-based animation, fine for basic motion, lacks advanced features such as curve-based motion, velocity controls, and nonlinear interpolation (for simulating gradual movement).

Presenter 3D 3.6.3 ♦♦♦½

VIDI

A Mac 3-D stalwart, Presenter 3D (formerly Presenter Professional) has a compelling mix of CAD-oriented features (precision modeling tools, object-weight calculation based on a specified mass) and general-purpose power (it's a good ray tracer). Its 3-D-sound features, such as Doppler effects, are unique. It offers much of the modeling power found in Sculpt 3D, but with a better interface. The Lite version ($95), limited only in the file sizes it allows, is a good, inexpensive introduction to advanced modeling.

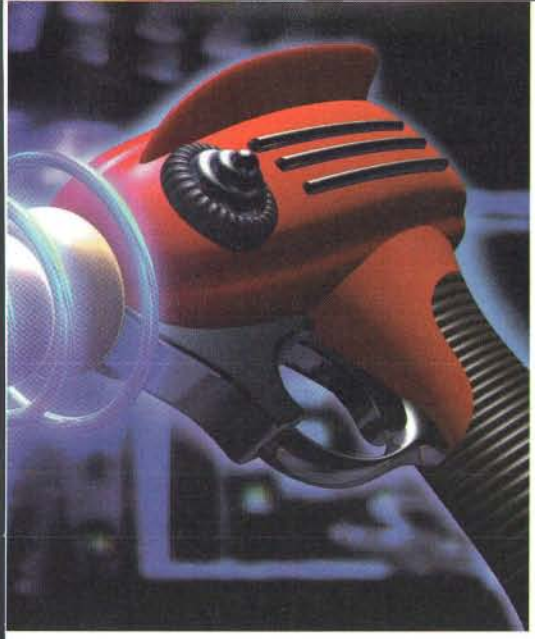
PROS: Good spline-based modeling tools; new multitarget object morphing for creating complex character and facial animations; sounds can be assigned to objects to generate stereo animation soundtracks; unique object-oriented procedural animation.

CONS: Full version is relatively expensive; lacks seamless data linking between separate modeler and render/animation modules; printed documentation (free of charge) has to be requested separately; hardware copy protection.

Ray Dream Studio 4.1.2 ♦♦♦♦

MetaCreations

BEST BUY This integrated package got a big boost when the Studio version incorporated animation. Although its interface is a bit unconventional and its animation capabilities aren't as good as Infini-D's, it's a great value and a good



option for novice 3-D illustrators, with capabilities you can grow into once you've mastered the basics.

PROS: Modeling Wizard steps users through modeling tasks; robust Shader Editor, for compositing and layering textures; textures can be painted directly onto 3-D objects; the only 3-D product on the Macintosh that doesn't require an FPU (math coprocessor); estimates the time needed to render a scene, a unique feature among the reviewed packages.

CONS: Has longer learning curve than comparable programs; cluttered interface; spotty support of Ray Dream's own DreamNet network rendering scheme.

Sculpt 3D 4.2 ♦♦♦½

Byte by Byte

Sculpt 3D offers perhaps the best-looking ray tracing on the Mac, and its modeling tools, once mastered, are industrial-strength. Unfortunately, its clunky interface can get in the way. If you can spare the time to learn it, Sculpt 3D will give you great illustrations and fly-throughs. But it's not for animators or the faint-of-heart.

PROS: Robust modeler, with Bézier-based, vertex-level editing for B-splines; renders up to 64-bit color (16 bits per color channel); good Boolean operations; high-resolution output; deformation modeling (stretch, pull, and warp); batch rendering; reasonable price.

CONS: Only the camera can be animated; obtuse interface and modeling methodology; no floating palette or timeline for animation.

StudioPro 2.0.2 ♦½

Strata

StudioPro has historically been a leader in 3-D for the Mac OS, but the current incarnation of this reasonably priced, powerful, integrated application is plagued by poorly implemented features, horrendous bugs, instability, and the lack of promised (and even documented) functions. Version 2.1, due in June, is supposed to fix most of the bugs in StudioPro 2.0. If it does, StudioPro may regain the glory it once had; otherwise, artists will be jumping ship.

PROS: Bézier-based, vertex-level editing; excellent ray-tracing quality; animatable ribs for skinned objects; nonlinear interpolation for keyframes; improved Boolean behavior; Raydiosity rendering speed significantly improved.

CONS: Bug-ridden; falling behind in the state of the art; ray-tracing speed moderate at best; substandard MetaBalls modeler; lacks most of the advanced features promised for this revision.

3D Dizzy 1.0 ♦½

Vertigo 3D

This Adobe Photoshop plug-in lets you open and render existing 3-D models within a Photoshop file. If you already have a 3-D program that can render PICT files with embedded alpha channels, 3D Dizzy's value is questionable.

PROS: Easy to learn; usable within Photoshop; supports two rendering modules, flat shading, and ThinkFish LiveStyles; CD-ROM includes five hundred 3-D models.

CONS: Imports only Apple's little-used 3DMF format; low-quality rendering; doesn't support rendering into a different layer; no texture capabilities.

3D World 2.0 ♦♦♦

Microspot

Developed as a demonstration of Apple's QuickDraw 3D technology, 3D World showcases the technology well but is essentially useless for technical or artistic purposes.

PROS: Easy-to-use basic 3-D shape-creation/editing tools; a few special effects (explosions, gravity, others).

CONS: Rendering is limited to flat shading (used in most 3-D apps for quick-and-dirty draft renders); no robust modeling or texture capabilities; very limited animation features.

Tilt 1.0 ♦♦♦½

Cognicon

A set of six plug-ins for Adobe After Effects, Tilt lets you bring 3-D models into After Effects scenes. With no modeling capabilities, and dependent on After Effects for rendering and animating image layers, Tilt is a little too expensive for what it delivers, but it's the only 3-D After Effects plug-in so far. It comes bundled with FreeD, an Adobe Photoshop modeling plug-in that wraps 2-D images around 3-D primitives.

PROS: Allows After Effects layers to be used as texture maps while retaining masks and alpha channels; creates DVE/VideoToaster-style effects; user-definable anti-aliasing; creates primitive and mesh objects; imports 3DMF models; video-mesh (VMesh) objects can use animated layers for height maps, resulting in animated displacement effects.

CONS: VMesh functions are (understandably) slow; overpriced.

Touch-3D 2.0 ♦♦♦

Lündstrom Design

This unique program "unfolds" 3-D objects into 2-D shapes that can be printed, cut, and folded into real models. It's useful if you do 3-D CAD or computer-based prototyping, but its focus is too narrow for general use.

PROS: Vertex-level editing; can plot or print large designs across several sheets; library stores commonly used shapes; imports/exports DXF, 3DMF, MiniCAD-text, and Adobe Illustrator files; runs on 68oxo as well as Power Macs.

CONS: Limited modeling tools; weak feature set.

Tree EIAS Storm 4.0.5 ♦♦♦♦½

Onyx Computing

This powerful modeling and animation plug-in for Electric Image Animation System generates naturalistic trees moving in the wind. Although not cheap, it's an exceptional program and the results are breathtaking. If you do 3-D video or film work, Tree EIAS Storm is the key to amazingly realistic outdoor scenes.

PROS: Robust control over all aspects of tree geometry and elasticity; flexible polygon-saving techniques; extremely detailed wind controls, including timing, random variation, gust speeds versus sustained speeds; can import Tree Professional models; interface changes based on the tree class you specify (broad-leafed, conifer, etc.).

CONS: Requires lots of practice and experimentation to get a handle on the extensive range of parameters.

Tree Professional 4.0 ♦♦♦♦½

Onyx Computing

Tree Professional does only one thing — model trees — but it does it extremely well. The results are incredibly realistic and can be saved as DXF models for import into other programs. Tree Professional is unmatched, and its relatively high price is equaled by its abilities.

PROS: Controls attributes such as trunk shape, bough density, and leaf shape; custom tree-branching algorithms; partial DXF export allows only visible parts of a tree to be exported, saving time in display and rendering; "chain saw" tools allow for virtual pruning; leaves can be replaced with other objects, such as flowers or fruit.

CONS: Requires technical prowess to successfully accomplish detailed editing of tree types.

Type 3d 2.5 ♦♦½

Strata

Type 3d is a bare-bones modeler and renderer that turns type and EPS artwork into 3-D shapes. With its low price tag, Type 3d is fine for 3-D dabblers or still 3-D logos, but it's useless for flying logos, animations, or video projects.

PROS: Good rendering quality (up to 4,000 pixels across); Bézier-based bevel editor; different textures can be applied to the front, bevels, and sides of the same letter; assignable letterspacing; able to import 2-D shapes for extrusion; Adobe Photoshop-compatible filter support for postrender image processing.

CONS: Has no animation capability; offers minimal texture and rendering controls; has only two texture-mapping types (cubic and planar).

Vision 3d 4.0 ♦♦½

Strata

Strata's most venerable 3-D application, the once-advanced Vision 3d is now strictly for the amateurs and beginners market. It's still a good introduction to 3-D for novices, though.

PROS: Vertex-level editing; good control over ray-tracing parameters; fog and environmental effects; visible animation paths; unique RenderScript mode renders object-based EPS files; robust texture editing.

CONS: Primitive animation tools lack velocity controls and allow only one keyframe per object; QuickTime movies can't be used as texture maps, light gels, or gobbos (moving light gels); dysfunctional Boolean operations; no true texture layering (only one texture per surface parameter); no control over spotlight falloff.

Zoom 5.0 ♦♦♦

Abvent

Zoom is primarily an advanced modeling package, with some rendering capabilities (nothing more sophisticated than anti-aliased Phong shading). It seems aimed at CAD users, industrial designers, and architects. Many of its rivals, such as form•Z or CAD packages, are as complex as Zoom but more capable for complicated tasks requiring numerical accuracy. Zoom Light ($595) differs only in how many polygons it allows per file. Zoom is bundled with Cumulus, software for cataloging and viewing large batches of graphics files.

PROS: Sophisticated, powerful modeling tools; anti-aliasing can be applied to textures, object contours, or both; snapping can be determined by a design grid or by points of an existing model; generates excellent mesh objects; exports files for rendering in Art•Lantis or MacRenderMan.

CONS: Slow; lacks automatic window redraw; poor camera-only animation system (no real-time preview while moving, rotating, or resizing an object — shows only wire frame or bounding box); the constant need to "validate" a selection of more than one vertex slows down the modeling process; no way to interrupt rendering; lack of a floating layer palette makes layer implementation difficult; substandard documentation.

David Biedny and Nathan Moody have produced special effects for movies such as The Rocketeer, Hook, Terminator II, *and this summer's new release* Spawn.

Directory

Abvent
San Francisco, CA
415-759-1541
www.abvent.com

auto*des*sys
Columbus, OH
614-488-8838
www.formz.com

Byte by Byte
Austin, TX
512-305-0360
www.bytebybyte.com

Cognicon
San Jose, CA
408-257-9040
www.cognicon.com

Credo Multimedia
Burnaby, BC, Canada
604-291-6717
fas.sfu.ca/lifeforms.html

Electric Image
Pasadena, CA
888-736-3371
818-577-1627
www.electricimage.com

PaXar Technologies
(for Lündstrom Design)
Victoria, BC, Canada
800-260-0905
250-474-8975
www.csbcomp.com/PaXar/home.html

Macromedia
San Francisco, CA
800-526-0498
415-252-2000
www.macromedia.com

Maxon Computer
Eschborn, Germany
49-6196-481811
49-6196-41885 (fax)
www.maxon-computer.com

MetaCreations
Santa Barbara, CA
800-472-9025
805-566-6200
www.metacreations.com

Microspot
Saratoga, CA
800-622-7568
408-253-2000
www.microspot.com

Natural Graphics
Rocklin, CA
916-624-1436
www.naturalgfx.com

NewTek
Topeka, KS
800-368-5441
913-228-8000
www.newtek.com

Onyx Computing
Cambridge, MA
617-876-3876
www.onyxtree.com

Positron
Omaha, NE
800-365-1002
402-330-7011
www.3dgraphics.com

Strata
St. George, UT
800-787-2823
801-628-5218
www.strata3d.com

The Valis Group
Tiburon, CA
800-825-4704
415-435-5404
www.valisgroup.com

Vertigo 3D
Vancouver, BC, Canada
604-684-2113
www.vertigo3d.com

Visual Information Development Inc. (VIDI)
Arcadia, CA
818-462-1905
erehwon.caltech.edu/vidi

Yonowat
San Francisco, CA
415-788-1652
www.yonowat.com

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What you say about color printing can't be printed here.

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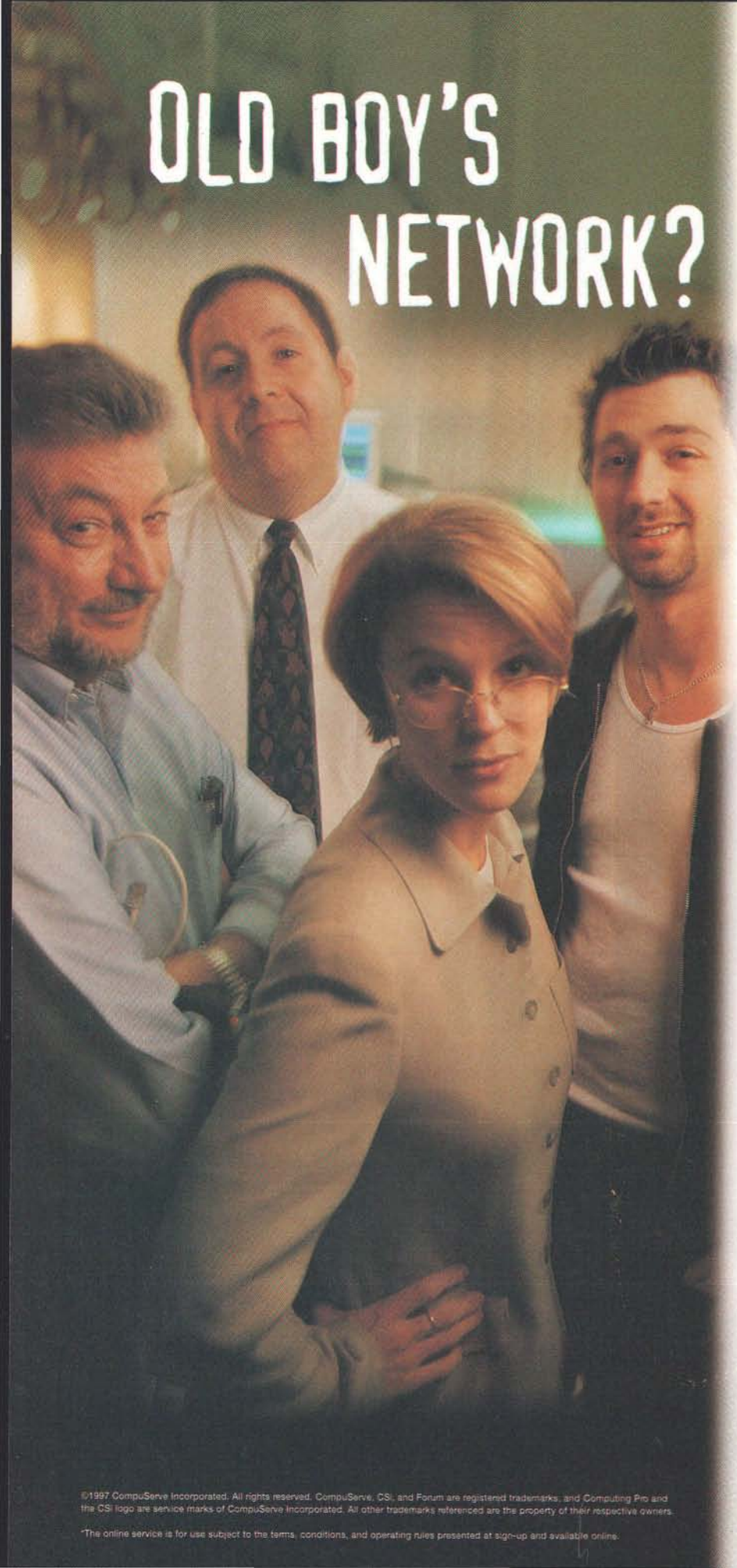

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MacUser QuickStart

Mac OS 8

Rock-solid stability and long-awaited features make OS 8 a must-buy — as long as your Mac supports it

MAC OS 8, APPLE'S SECOND OS UPGRADE THIS YEAR, IS A WINNER.

It's been a long time coming and it's not the OS 8 you were led to expect, but it's here. If you don't know by now that Mac OS 8 originally was the official name of what was previously code-named Copland; and that Copland was canceled; and that what's now called Mac OS 8 was originally called Mac OS 7.7; and that Apple decided to name the new release Mac OS 8 instead, because it contains quite a few features that Copland was supposed to have delivered, you obviously haven't been paying attention. You probably missed Ellen's coming-out episode too. (There's a VHS copy kicking around the *MacUser* office if you want to catch up.)

But enough history. You want to know what's in this new Mac OS release and whether you should care or not. The respective answers are "lots of cool new stuff" and "yes." Mac OS 8 is an upgrade everyone should install. It's got speed improvements. It's stable — many people discover that even in its beta version, it crashes less than Mac OS 7.6. It's full of handy new shortcuts (if you need to convince your boss to shell out for the upgrade, say that it will make you more productive). Not to mention that it's got a whole new look that's just, well, more elegant. And if you've got to stare at something all day long, it might as well be something elegant.

Making the (up)Grade

Did we say that *everyone* should upgrade to OS 8? Perhaps we were a bit hasty. You see, not everyone *can* upgrade. If you own a 68030-based Mac, any 68030-based Mac, you're out of luck. Continuing in the tradition of 7.6, which dropped support for all Macs up through the Classic and the IIcx, Mac OS 8 requires a 68040- or PowerPC-based Mac OS system.

Specifically, OS 8 adds the following hardware to the "excluded" list: the Mac Classic II, Color Classic, Color Classic II, IIvi, IIvx, LC 520, LC II, LC III, IIci, IIfx, IIsi, MacTV, Performa 200, Performa 250, Performa 275, Performa 400, Performa 520, Performa 600, PowerBook 140, PowerBook 145, PowerBook 145B, PowerBook 150, PowerBook 160, PowerBook 165, PowerBook

By Henry Bortman

BETA Mac OS 8 at a Glance

WHO NEEDS IT: Anyone with a 68040- or PowerPC-based system. Even those of you still using System 6.0.5, the last truly great Mac OS release, should consider this upgrade.

WHY: It's got snap, it's stable, it looks cool, new Finder actions make mousing around more efficient, and optional settings and preferences are easier to find.

BEST NEW FEATURE: A toss-up between the multithreaded Finder (which lets you perform multiple copy operations at the same time) and spring-loaded folders (which let you navigate a disk's folder hierarchy with a single mouse action).

WORST OMISSION: Internet functionality still not integrated sufficiently into desktop environment.

COMPANY: Apple Computer, Cupertino, CA; 800-776-2333 or 408-996-1010; www.apple.com.

PRICE: $99 (estimated street).

Face to Face with OS 8

Finally! After years of giving demos about the Mac's new 3-D look, Apple is delivering it in Mac OS 8. But the new Platinum appearance (Apple's official name) is merely the window dressing on this new OS release. OS 8 is chock-full of goodies that help you work faster and make the Mac more flexible and easier to use than ever. This composite screen shot — all of the items shown can't actually appear simultaneously — will guide you through the highlights of the Mac OS 8 desktop.

A. Updated File menu. Mac OS 8's File menu has been updated to include the Move To Trash command, which operates on any Finder selection. Label, which had a menu of its own in System 7, is now a submenu on the File menu.

B. Relocated Help menu. OS 8 replaces System 7's question-mark help menu with a less cryptically named Help menu. The menu is also moved from the right side of the menu bar to the left, where it joins the other command menus.

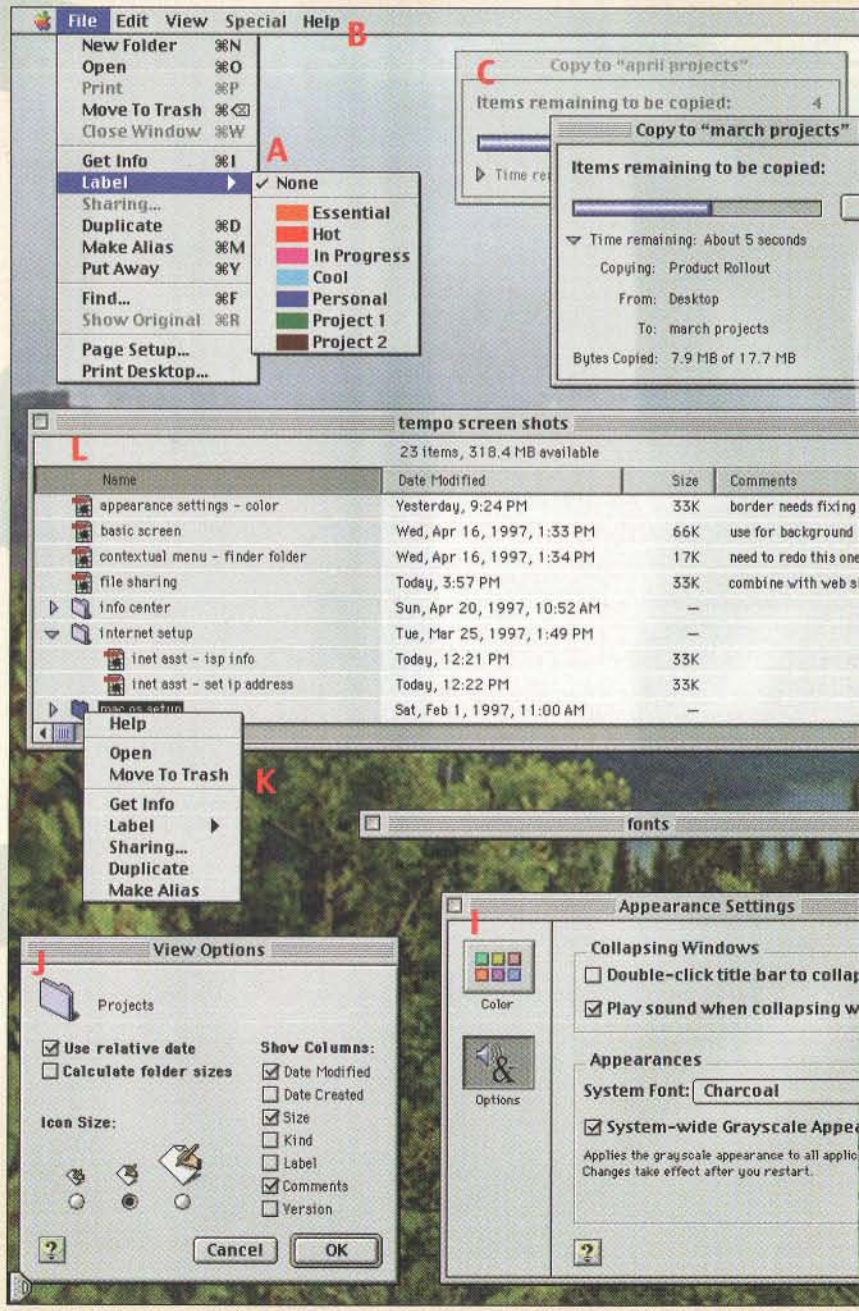
C. Multithreaded Finder. You no longer need to purchase a third-party utility to perform multiple file copies simultaneously. The Finder can now accomplish the task all by itself, empty the Trash at the same time, and still let you navigate through Finder windows without having to wait. Even better, the Finder is PowerPC-native in Mac OS 8, so file copying is faster too.

D. Expanded view options. Those of you who like the Launcher will be happy to know that Mac OS 8 lets you choose to display the contents of any window — even the desktop — as buttons. Clicking once on a file or folder button opens the file or folder; clicking once on an application button launches the app.

E. Integrated collapsible-window controls. In OS 8, the functions of System 7's WindowShade control panel are integrated into the Finder: Clicking on a new control in the top right corner of any window reduces the window to just its title bar. The zoom-box control, which previously occupied this position, has been elbowed just a little to the left.

F. New Web Sharing function. The new Web Sharing control panel extends System 7's personal file sharing into cyberspace. This feature lets you use the familiar Users & Groups control panel to enable others to access specific folders over the Internet or over your intranet.

G. Reorganized Finder preferences. The new Finder Preferences dialog box, accessible from the Finder's Edit menu, combines elements of System 7's Labels and Views control panels with two new functions: Simple Finder and spring-loaded folders. Simple Finder, which will appeal to novice users, reduces the number of available menu choices in the Finder. Spring-loaded folders make it possible to copy or move a file to any location with a single mouse click. When dragging a file to a new location, or Option-dragging to copy it, you'll see folders spring open to display their contents as you pass the cursor over them. You can continue further through nested folders to a desired destination or "walk back up" the hierarchy by moving the cursor outside a folder window.



H. Pop-up windows. Drag a folder window to the bottom of the desktop, and it becomes a tab that bears the window's title. Clicking on the tab opens the window; clicking on the tab again or clicking on anything outside the window closes it. You can resize a pop-up-folder window by using special handles at its top left and right corners.

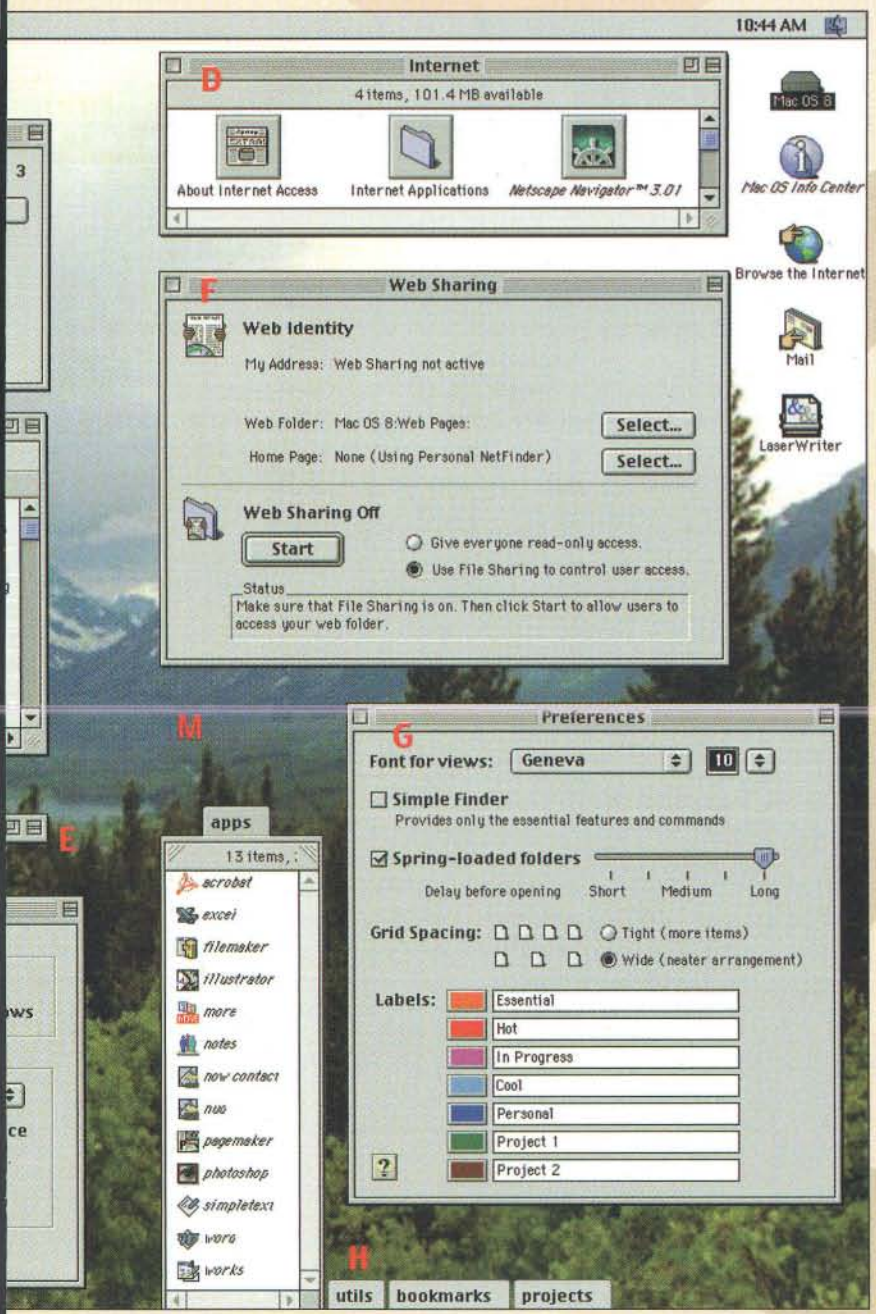
I. Relocated appearance controls. A new control panel, Appearance Settings, lets you customize several elements of your Mac's desktop look, including system font and accent color. Note that OS 8 ships with a new default system font, Charcoal, used in menus and window title bars. Some aspects of the former WindowShade control panel are also incorporated into Appearance Settings.

J. Reorganized view options. The View menu now contains a View Options item, which replaces System 7's Views control panel. Selecting View Options brings up a dialog box that varies, depending on the type of view chosen for the selected folder: list, icon, or button. Shown here are the options for a list view.

K. Contextual menus. New to OS 8 is the Finder's use of contextual menus to provide quick access to common commands for working with files and folders. When you hold down the Control key and click on a file or folder, a menu appears, under the cursor, that lets you move, copy, make an alias, or perform other common actions relevant to the item you clicked on. Third-party-software vendors as well can take advantage of contextual menus, although none have yet announced plans to do so.

L. Redesigned list-view appearance. The list view has been given a major face-lift in Mac OS 8. New attribute-column options include Comments (shown here), Date Created, and Version. (In case you're wondering: Column widths are not resizable.) Clicking on one of the buttons at the top of any column highlights the column in gray and sorts by its attribute. Items in list views are separated by horizontal lines for easier viewing. Optional relative dates indicate files that were created "Today" or "Yesterday." The window header reports the number of items in the window and the space remaining on the hard disk; information about disk space already filled up has been eliminated.

M. Enhanced desktop customization. In addition to a tiled background pattern, you can select an image-file photo as your desktop background in OS 8. Shown here is Glacier National Park, one of several photographs Apple supplies with the new OS.



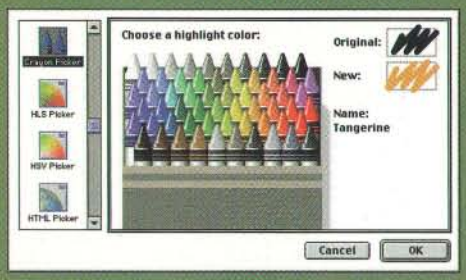


Figure 1 · Color Picker Waxes Whimsical
Apple's new color picker provides useful as well as whimsical alternatives to traditional color-specification dialog boxes. On the useful front are RGB and Web-safe color pickers. Shown here is the whimsy, a crayon picker.

Figure 2 · Info at Your Fingertips
In addition to Balloon Help and Apple Guide, Mac OS 8 includes Info Center, which provides extensive online documentation about OS features. An HTML document that can be viewed with any Web browser, Info Center also includes live links to Apple's Web site that you can use to update help files instantly.

Figure 3 · Up and Running
Mac OS 8 includes two Setup Assistants, new utilities that walk you through the process of configuring your Mac. The Mac OS Setup Assistant helps you perform such basic tasks as giving your computer a network name and (as shown here) creating a shared folder. The Internet Setup Assistant helps you connect to the Internet.

165c, PowerBook 170, PowerBook 180, PowerBook 180c, PowerBook Duo 210, PowerBook Duo 230, PowerBook Duo 250, and PowerBook Duo 270c. Also out are systems with 68030 processors that have been boosted to 68040 or PowerPC processors via upgrade cards, although logic-board upgrades will accommodate OS 8.

Long list, huh? The astute among you may notice that it includes most of the PowerBook models ever made. Given that Apple's first attempt at a PowerPC-based PowerBook, the 5300, was a near-total disaster and that its successors haven't been shipping for all that long, this is likely to be a bit of a sore spot with the mobile crowd. But such — at least, so we're told — is the price of progress.

As for memory, Mac OS 8 will run on systems with as little as 8 MB of RAM, provided virtual memory is turned on and set to 16 MB. If you want decent speed, though, don't waste your time with anything less than 16 MB of real RAM. In fact, we recommend having at least 32 MB.

Make sure that you have plenty of disk space available too. The Mac OS 8 Installer tells you that 60 MB of free space is sufficient for a basic installation, but the System Folder alone takes up over 65 MB. The total space eaten up by the basic installation is more than 90 MB. If you install all the optional goodies, the total grows to 146 MB. The Internet Extras folder gobbles up another 9.5 MB.

Go to **www.macuser.com/bookmarks**
for one-click access to sites related to Mac OS 8, such as:

8-Breaking News
Ric Ford's MacInTouch site is your best bet for up-to-the-minute reports on what's bugging people about Mac OS 8.
www.macintouch.com

The Rap on Rhapsody
Jump to this site for up-to-date info on Apple's next-generation operating system.
www.macos.apple.com/macos/releases/rhapsody/letter.html

When Copland Was Contemplated
To see what OS 8 is missing — the still-unfulfilled promise of Copland — check out our August '96 story on the original OS 8.
www4.zdnet.com/macuser/mu_0896/features/cover.html

The Right Stuff

Much of the improvement in OS 8 is in its look and feel. The new 3-D look is known officially as the Platinum appearance. Of course, if all you want is platinum plating, you can just install Aaron, a popular extension that gives Mac OS 7 an 8-ish look, and save yourself some money. But as the "Face to Face with OS 8" figure and the "Finder's New Feedback" table attest, OS 8's Finder offers much more than good looks.

For starters, it's fully PowerPC-native, so it's speedy. More important, it's multithreaded, so you can initiate multiple file copies, empty the Trash, and cruise through folders on the desktop all at the same time.

Then there are a bunch of new keyboard and mouse tricks. Spring-loaded folders. Pop-up windows. Contextual menus. Shortcuts for making aliases and putting files in the Trash. It's hard to quantify the value of improvements such as these. Suffice it to say that once you're used to them, you'll have a hard time going back to Mac OS 7.6.

A Jumble of Internet Tools

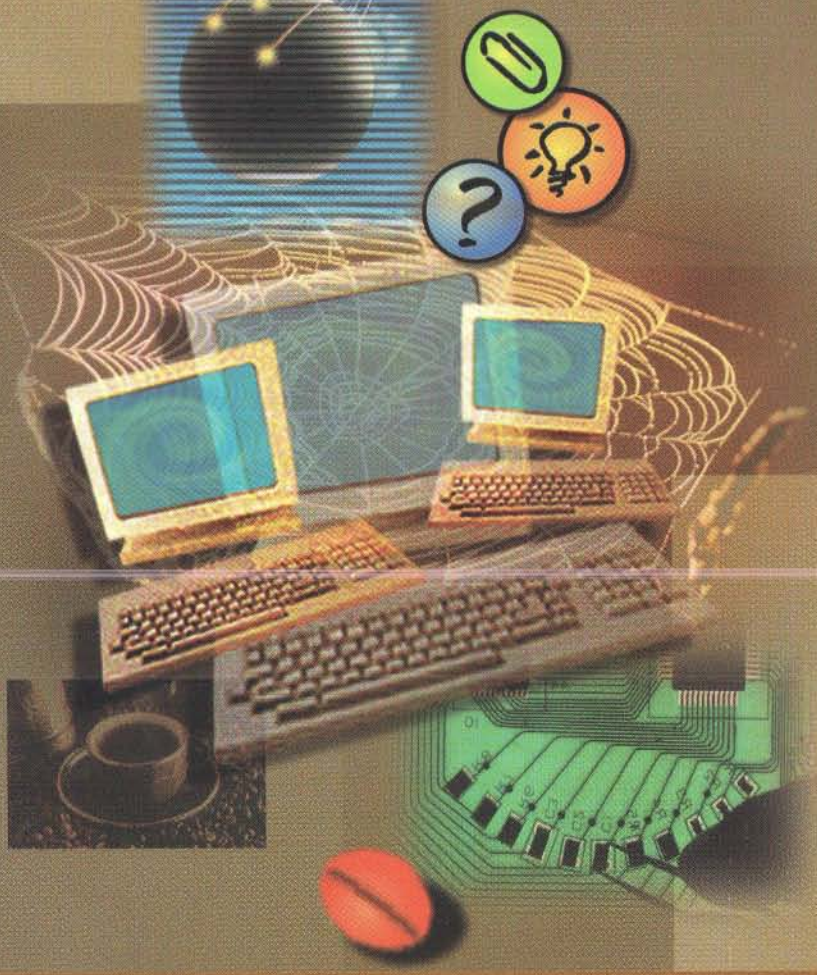
The other Big Deal in Mac OS 8 is the inclusion of a slew of Internet software. Note the use of the word *inclusion* rather than *integration:* Apple still has a long way to go to make the Internet a seamless extension of the Mac OS. The company has bundled a good collection of Net-useful stuff with OS 8, but it's far more a sampler than a cohesive collection of tools.

The basic OS 8 install will grace your hard disk with no fewer than two Web browsers, Netscape Navigator 3.01 and Apple's own Cyberdog 2.0 (although you have to wonder why, considering Apple's decision to kill the OpenDoc technology that underpins it). A third browser, Microsoft Internet Explorer 3.01, is included on the OS CD-ROM as a bonus installation. Even though Navigator and Explorer each include e-mail readers, you also get a third, Claris Emailer Lite 1.1, as part of the basic install. Still more Web tools: Adobe Acrobat Reader 3.0 is included as an extra, along with Aladdin's StuffIt Expander 4.0.2 and an installer for DropStuff 4.0.

Mac OS 8 also includes two products — Castanet Tuner and PointCast Network — that tap the Web's hot fad of the hour, "push" technology. Castanet Tuner lets you "subscribe" to Web "channels," which give you access to anything from information feeds to full-blown Web-based applications. "Transmitters" on

SPECIAL ADVERTISING SECTION

Java™ Computing: A new alternative for a new millennium



JAVA

As we stand at the threshold of a new millennial age, new considerations have begun to drive corporate decisions about how to meet current and future objectives. And no wonder: today's information technologies have created many opportunities that simply didn't exist a few years ago and couldn't even be conceived a generation ago.

Chief among these technologies is, of course, the Internet and its friendliest face, the World Wide Web. In just a couple of years, this duo has transformed the way most companies think about doing business. Nearly everyone recognizes the spectacular possibilities of truly transparent, multiple-media connectivity across time, space and computing platforms.

It doesn't take a visionary to see that such straightforward, built-in connectivity between people and their information machinery means that it'll be easier and less expensive to keep customers happy, to get employees to work better with each other, to create and deliver products and services more efficiently. For a growing number of organizations, Internet-inspired change is already dramatically underway as a new and flexible channel to customers, business partners and suppliers continues to broaden its embrace.

A planned, incremental implementation of Java computing can finally deliver what you've long wanted from your information systems

Like many new opportunities, those on the Internet and the internal corporate intranets modeled after it are most effectively and successfully pursued with new tools and techniques. After all, the old tools and techniques are designed to work best with old technologies and old opportunities.

But what corporate enterprise can possibly afford to reinvent its information technology with each new breakthrough or insight? Sure, everyone expects — indeed, wants — some incremental investment in new capabilities. And it would be great to bring some order and sense to the chaos of environments, platforms and protocols that currently passes as an information technology infrastructure in many organizations.

Scrapping the huge investments in existing information systems, however, or tossing out entire databases of invaluable knowledge, or retraining vast numbers of workers in new computing environments and techniques is simply beyond consideration.

So what's the alternative?

Java™ computing is the alternative. It's an entirely new kind of cross-platform environment that sits atop — and works with — your organization's existing systems and networks. Later, if and when necessary, it can slowly, incrementally replace costlier, less efficient elements. The result? A rational, significantly less expensive information systems infrastructure that integrates and extends the value of what you've already got.

A planned, incremental implementation

COMING SOON TO A BANK NEAR YOU ...

"Our clients want their bank to be more available at every level to carry out banking operations during off hours," states Rudi Peeters, electronic banking officer at CERA Bank, Belgium's seventh largest financial institution. "Electronic banking is an ideal solution. Internet access is taking the well-established home banking formula a step further."

CERA's first online retail service application, written completely in Java, is a loan mortgage calculator that allows potential borrowers to estimate payments from their home computers using only a browser. Through this CERA Online service, the bank reduces loan application processing time.

The loan calculator works as most Java applets do. Customers download the application and run it on their computers, regardless of the underlying operating system. The easy-to-use program prompts you to enter such information as loan amount, time to borrow and type of payment. The mortgage calculator then returns a payment schedule as well as a yearly breakdown of the remaining principle.

In addition to the mortgage calculator, CERA Bank customers can perform other banking functions such as transferring funds, checking account balances and consulting exchange rates via CERA Online.

Customers with Internet capabilities reach CERA Online as they would any other site. For customers without Internet access, the bank's local branches provide an online service kit, complete with Microsoft's Internet Explorer browser, IBM's dial-up interface, TCP/IP, and security software.

A solid foundation

The bank's primary use of its new Java applet is to lure new customers. But as more online customers are added, the bank can drive down internal costs by steering more transactions to the Internet. Online transactions are significantly cheaper than those that take place at the branch or over the telephone.

Aside from the marketing use of network computing, CERA intends to consolidate its distributed internal network more centrally via an intranet that the local branches can use. The bank envisions this model being especially important as it acquires and merges with other banks and businesses.

"Our clients," Peeters notes, "have cheap and easy access to the Internet, benefiting from maximum flexibility in carrying out their banking transactions. And CERA Bank has laid a solid foundation for many years of electronic banking."

Leverage for the legacy

CERA Bank was able to both protect and leverage its investments in IBM systems by using an OS/2 web server to enable secure IMS transactions over the Internet. CERA's centralized control allows the bank to react quickly to changing market conditions and roll out new services right away.

"Because we've chosen this technology," Peeters adds, "we can be ready very fast for alternative distribution channels, such as interactive television."

of Java computing can finally deliver what you've long wanted from your information systems: almost everything really does fit together and is easy to maintain, easy to grow and easy for even inexperienced desktop computer users to master.

Read on to find out more about Java computing and some of the many ways it's being put to work right now by companies just like yours.

THE JAVA PLATFORM DELIVERS

Unlike any other kind of computing environment, Java computing offers an architecture that leverages enterprise IT investments across all platforms. Java applications start as Java source code, which is then compiled to bytecode and next stored on a server or a local computer. In order to execute a Java application, a user invokes a Java Virtual Machine, which executes the Java bytecode. Unlike most other programming languages, Java bytecode is not platform-specific or native to any particular processor.

All of today's popular browsers contain a Java Virtual Machine including Netscape Navigator™, Microsoft Internet Explorer, and Sun's HotJava™ Browser. Java development environments also contain a Java Virtual Machine in order to test the Java code developed using them. In addition, standalone Java Virtual Machines running on desktop platforms such as Microsoft Windows, MacOS and Sun™ Solaris™ can execute Java code, and a new generation of network computers, such as Sun's JavaStation™ network computer, executes Java code directly as if it were just another program.

If you want to revitalize, not replace, your legacy systems and streamline your organization's information handling with an enterprise intranet, you need Java technology. And if you want to exploit emerging opportunities in Internet-enabled commerce, Java computing is key.

Here's why:

- ***Powerful portability.*** Modern and object-oriented, the Java language comes with an efficient and powerful combination of interfaces that work well with standard distributed programming models. The Java environment's own standards-based platform-neutrality at both source and binary levels means it's inherently portable. And because the Java platform includes a language as well as a set of standard class

CSX BOOSTS CUSTOMER SERVICE WITH JAVA COMPUTING SOLUTIONS

CSX Corp. is proving that it can dramatically improve customer service and increase revenues while reducing operational costs. As the largest global freight transporter in the nation, with revenues over $10 billion, CSX has long recognized the importance of its customer relationships. One way to strengthen these ties is to give customers a better and faster way to place shipping orders, as well as an ability to track shipments en-route. So the company developed a "transportation workstation" application, called TWS, which was written in C and deployed on the OS/2 platform.

While TWS has been successful in its mission, it faced practical limits to the number of nodes that could be cost-effectively deployed.

With the emergence of web-based technologies and Java computing, CSX saw an opportunity to revisit its business model by deploying a much more cost-efficient solution to its diverse population of users.

"Java computing has been a breakthrough for our business because our business model is changing," notes John Andrews, president of CSX Technology. "We're becoming much more customer-centric, which has caused us to become much more network-centric. Once you have the network in place, Java desktops are literally plug-and-play."

Improving business relationships

A new Java based application, dubbed TWSNet, was a big success and has since been enhanced to provide a wide variety of internal services, including rail car and tanker management, service history and fleet management, even some common desktop productivity tools such as e-mail and a contact database. For customers, the service palette includes waybill entry, shipment tracking, and damage claims with selective access to the company's mainframe database.

Fast, responsive deployment of business-critical apps

TWSNet was initially developed and deployed for less than $1 million and was implemented in a constant delivery rollout just 90 days after the project began. The first release included shipment-status queries, e-mail, access to the corporate address book, customer account information and an interactive shipment tracking map. The second TWSNet release included freight-car ordering, freight claims and bill-of-lading submissions. The current release adds equipment pool management, performance monitoring and pricing information.

Today, Java computing is being favorably evaluated in 15 of CSX's largest customer sites on Java enabled browsers on PCs. At CSX, JavaStation network computers from Sun Microsystems run the HotJava Browser, and TWSnet lives on a dedicated Sun UltraSPARC™ 170 server behind the corporate firewall. Information resides in an Oracle database that also runs on an UltraSPARC server and receives regular updates from the IBM series 9000 mainframe.

"Java came out on top," says Andrews of his rigorous evaluation of current technologies. "It allowed us to get our information product to market much more quickly and effectively."

Now it's possible for CSX to extend electronic links to more users than ever before. Immediate deployment can be made to any existing PC users with a Java enabled web browser.

"Frankly, Java makes supporting the desktop much easier from a systems standpoint," Andrews says.

Show me the money

"Java enterprise computing has saved us well over $5 million on an annual basis," asserts Andrews.

KEEP MOVING! JAVA COMPUTING HELPS WEB TRAVEL SITE

Providers of online travel services face tough competition and ongoing pressure to offer the best.

Travelocity, (http://www.travelocity.com) co-created by Worldview Systems and SABRE Interactive, is the leading provider of travel reservation and destination information on the Internet, with a user base in excess of 750,000 registered members.

"We needed to have better direct database access for delivery of information on the fly," says Neal Checkoway, president of Worldview Systems. "At peak times, typically around noon, things would slow down appreciably."

For its solution, Worldview turned to Java computing and KIVA Software, a leading provider of Internet application server software for developing and deploying web-based, business-critical applications.

Using the KIVA Enterprise Server SDK and KIVA Enterprise Server, Worldview required less than four months to replace its CGI/Perl scripts with a web application written in the Java language, and running on KIVA Enterprise Servers. Located between Travelocity's web servers and their multiple databases, the KIVA Enterprise Server processes user requests, retrieves realtime data from databases and displays it in a customized fashion.

Unlike earlier versions of the Travelocity website, in which data was static, customers now access content generated dynamically from Travelocity's numerous databases. Capitalizing on the KIVA Enterprise Server's powerful performance features, Travelocity now delivers quick response times to customers even under peak loads.

"We use the KIVA Enterprise Server's transactional and dynamic database access capabilities to deliver highly interactive content and comprehensive online travel facilities to Travelocity customers," says Worldview's Checkoway. "As a provider of the most popular travel and reservations site on the web, we rely on the scalability of KIVA Software's solution to support Travelocity's large and growing customer base."

To find out more about KIVA Software Corp., visit http://www.kivasoft.com.

libraries, it's easy to build powerful, mission-critical applications that run on any Java Virtual Machine in any environment.

- ***Reliable, next-generation efficiency.*** Java applications run on all platforms and networks without needing any modification — a seamless environment reaching from server to client to cell phone and beyond. Thanks to the Java platform's virtual machine orientation, Java applications are easy to transport across Internet/intranet environments.
- ***Ability to add value to existing systems.*** With Java enabled web servers acting as gateways to your existing systems, HTML can be used as a way to publish information both within your organization as well as to suppliers and customers. After that, it's easy to incrementally advance your organization's adoption of online technologies and electronic commerce.
- ***Safety and security.*** Java computing encourages good software engineering practices. So despite its power, the Java language is actually a safer development environment than low-level languages like C or C++. The Java environment also features important built-in security, including strong memory protection, encryption and signatures, rules enforcement and runtime verification. The Java platform protects its users by placing strict limits on applications to prevent malicious actions.

The Java platform's security allows a user to import and run applications from the web or an intranet with little risk, since a Java application's actions are restricted to its "sandbox," an area of the web browser dedicated to that application and within which it may do anything it wants. But a Java application can't read or alter any data outside its sandbox. Hence users can run untrusted Java code without compromising their trusted computing environments. And if a user does accidentally download a hostile application or applet, the local machine will not be damaged.

- ***Simplicity and familiarity.*** The Java language is far less complex than C++, while retaining most of its power. Since Java language syntax and semantics borrow liberally from the widely-used C programming environment, the Java language is already familiar to an enormous and quickly expanding population of developers, even though it's very new.

"Java is so much more than just a programming language," says Shaun Maine, chief technical officer of Sanga International Inc. "It's a platform that encompasses database access, GUI control, security, network services and directory services — all of which allows a focus on business logic instead of just mundane programming tasks."

ENABLING EFFICIENT WEB COMPUTING

"We know our customers want to build and deploy mission-critical, performance-oriented business solutions that can fully exploit the Internet," notes Ken Nicolson, vice president of marketing at KIVA Software Corp. "Java is by far the language of choice for those developing the next generation of web-based business solutions."

KIVA Software (http://www.kivasoft.com) offers KIVA Enterprise Server, one of the industry's most comprehensive Internet application servers. It fully integrates system and application services to offer a superior architecture and application foundation that facilitates rapid development of high-performance, scalable business applications for the Internet.

Taking it to the enterprise

"The ubiquitous deployment potential of Java computing and KIVA's software," says Nicolson, "has enabled our customers to quickly extend their existing application functionality through the Internet."

With hundreds of thousands of programmers already conversant in the Java language, the variety of ways you can use the Java platform to exploit web computing's vast potential expands virtually daily.

An example is PlaceWare Inc.'s Auditorium. The first in a series of realtime applications enabling large groups of people to communicate and interact on the web, PlaceWare Auditorium (http://www.placeware.com) has everything a presenter needs to make highly interactive multimedia

presentations using Java enabled browsers. Participants can talk with each other, ask questions, vote and listen and respond to presentations.

Java computing is also well-suited to traditional business-critical applications.

Infospace Inc. (http://www.infospace inc.com), for example, offers several Java based decision support products, including SpaceSQL, SpaceOLAP and SpaceCharts.

SpaceSQL is a Java based intranet decision support solution with native access to the industry's leading relational databases, data marts and data warehouses. Requiring no installation, configuration or maintenance of client software, SpaceSQL allows companies to design, run and publish queries, reports and interactive Java computing charts to thousands of users via web browsers.

Powered by a scalable, multi-threaded Java server, SpaceSQL emulates the three-tier client/server model on the intranet, offering client-to-database persistence, data caching and server load balancing.

Infospace's customers are pleased.

"At Cisco," says Cisco Systems senior application engineer Nisfan Nawaz, "we take a keen interest in network performance — especially our own. We evaluated several options before choosing Infospace's server-based solution, not only for its efficient use of bandwidth, but for sheer ease-of-use. With just one day of training, our entire team was producing interactive charts and graphs of operational data to publish throughout the organization.

"Java is a key component of Cisco's overall IT direction and strategy. Cisco partners very closely with Infospace and their innovative Java technology to solve our critical business problems," Nawaz explains.

Write Once, Run Anywhere™

Java computing puts object-oriented programming to breakthrough use: downloading nuggets of Java application code from server to client on demand, regardless of the platform.

"Because of Java," points out Sanga International's Maine, "there is no platform-specific code. One version of our software runs on any hardware. Compare this to software written in C or C++, which has to be rewritten for 14 different platforms — immediately you've increased both cost and complexity.

"In addition to the fact that our customers will be able to run their Java servers on any hardware," he explains, "their client can be any browser on any platform, anywhere. Now any of your Java applications can be used not only over your corporate intranet, but extended to a corporate extranet, worldwide, without having to write even one line of new code."

Since Java applications normally reside on a server and are delivered to a client via standard network protocol only when needed, both application code and client data storage can be centralized on servers, along with administration and configuration control, enabling organizations to increase the cost-efficiency of their information systems infrastructure.

MUST-HAVE CONNECTIVITY

Existing systems and data interoperate easily with Java enabled computers, so you can build Java computing frontends onto your current systems and take advantage of the benefits of Java computing while protecting your investments in hardware, software and training. Thus a commitment to the Java platform can empower you to revitalize your IT infrastructure without forsaking any of your current IT investments. You can simply add appropriate Java computing capability to achieve the integration and control you need.

Extending system value with Java computing

The Java platform is particularly effective when an organization needs to access existing databases and transaction systems as well as new applications, since the Java platform has been extended to connect to databases as well as to CORBA-based object servers and other object servers.

In addition, many of Sun's Java computing allies have developed other useful connectivity tools. So, if you need to integrate Java applications with databases, legacy environments

HP INTRANET BOASTS JAVA BASED INTERACTIVE TRAINING

"We want our project teams to leverage the technical expertise of our most knowledgeable engineers and allow them to work cooperatively on a customer problem, indifferent to wherever the engineers are geographically located."

So explains Garry Orsolini, engineer/scientist for Hewlett-Packard's Worldwide Customer Support Operations, as he describes the decision to pursue a significantly new approach to communicating with employees all over the globe.

"We found that for time-constrained professionals, if something isn't as easy as picking up a telephone and communicating, it won't be adopted by the masses," says Orsolini.

Then came Java computing and PlaceWare Auditorium, a Java based conferencing product that permits presenters to make highly interactive multimedia presentations to audiences of all sizes using Java enabled web browsers.

With a nod to the "powerful experience of having text, graphics, audio and navigation all fully integrated within one environment on the desktop," Orsolini says about PlaceWare Auditorium: "The sum of the parts is greater than the whole."

Using the PlaceWare environment, the five-member HP project team constructed the Hewlett-Packard Desktop Classroom, a fully-integrated and interactive intranet-based application to train HP customer service professionals in a realtime global-community setting.

Written in the Java language and deployed on HP's main NT Netserver, which hosts both the HP website and PlaceWare components, HP Desktop Classroom allows the company to train more than 3,500 frontline support engineers in a timely and interactive manner. Employees benefit from a dynamic classroom setting that allows use of standard graphics and animation as well as an ability to time-stamp events, thus linking together corresponding slides, text and audio tracks.

For more information about PlaceWare and its products, visit http://www.placeware.com.

or object application code, you'll find many Java development solutions to choose from to create the completely integrated environment that's so critical to your company's future.

Boosting the bottom line. Sanga International, Inc. (http://www.sangacorp.com) is focused on improving the corporate bottom line in a wide variety of industries, including telecommunications, financial services, transportation, energy and healthcare. Its packaged Java applications that allow businesses to protect and extend the value of existing IT investments while also initiating Java based network-centric computing.

Sanga Enterprise Solutions address the growing need for enterprise-caliber, transaction-intensive Java applications by incorporating companies' unique business rules, accessing virtually any data source (including legacy mainframe data) and delivering customized application interfaces to any browser over existing network infrastructures.

Solving the problems of heterogeneous computing. Random Walk Computing, Inc. (http://www.randomwalk.com) offers Java consulting, system integration, custom development, products and training services focused on financial and healthcare industries. Clients include J.P. Morgan, GMAC and Mount Sinai Hospital.

"Our customers tend to have dozens, even hundreds of applications deployed throughout their enterprise, running on everything from Sun Solaris to Windows NT, from mainframes to VAX machines — all being accessed from locations around the world," explains Eric Lehrfeld, Random Walk's director of business development. "Java and web technology allow them to solve many of the massively expensive problems associated with this sort of heterogeneous computing."

New York City's J.P. Morgan & Co., for instance, entrusted the Java platform with some of its core business operations recently when it launched a Java application dubbed Emerging Markets Debt Option Pricing System, which delivers realtime updates concerning Morgan's derivative products to its sales reps' and clients' web browsers worldwide. The application took just two months to develop.

"Random Walk's business is problem solving and our customers want effective solutions," says Lehrfeld. "If there's a vendor whose software can help us provide those solutions, we want to know them and work with them.

Open Horizon worked closely with Random Walk to develop Market Watch, a pure Java realtime push-media system can securely publish to thousands of

BEGINNING AT THE END: HOSPITAL INTRANET EXPANDS WITH JAVA COMPUTING

New York City's Mount Sinai Medical Center needed to speed up one of its grimmer internal processes: issuing death certificates. Other hospitals in town handled the chore in as few as one or two hours. But at the city's largest acute care hospital, the task took five or six hours to complete. If Mount Sinai could speed up the process, then the freed-up resources could be devoted to patients still alive.

"In 1996, a cross-departmental internal team decided that re-engineering was the answer. Ways to streamline internal procedures were identified and these, the team decided, would be implemented in a document workflow system replacing the handwritten and typed certificate passed by hand from clerical staff to doctors to the Medical Records Department.

Workflow via intranet

Charles Bonomo, the hospital's director of clinical technology, saw this need for a document workflow system as an opportunity to exploit Mount Sinai's newly-built intranet. Bonomo wanted to take advantage of the intranet's infrastructure of web browsers, web servers and SQL databases to deliver applications quickly and inexpensively.

In addition, he wanted the new workflow system to be written in the Java language, which was ideally suited to Mount Sinai's intranet environment. Java applications run on any machine without recoding or recompiling, an important capability in Mount Sinai's heterogeneous computing environment. Also, the ease and speed with which network-savvy client/server applications can be built in the Java environment was important.

The hospital chose a solution developed by Random Walk Computing, the leading east coast Java development firm that had built the hospital's intranet.

Random Walk's Death Certificate system is expected to reduce the cycle time of the process by as much as 80%. It allows the chain of authorization involved in issuing death certificates to access their workflow from any station connected to the hospital's intranet, eliminating the need to install special software on each machine.

Bringing Java computing to healthcare

To deal with the high volume of communication necessary between various hospital systems, Mount Sinai had developed a C++ library and message parser that allows applications to communicate in HL7, a widely used healthcare messaging standard. These messages are routed over the network through message brokers and interface engines. So Random Walk integrated Mount Sinai's HL7 interface with the death certificate automated workflow.

That's only the beginning. Random Walk has also entered into a long-term relationship with Mount Sinai to create and support Java computing versions of the entire Sinai suite of HL7 utilities.

"What this means," notes Mount Sinai's Bonomo, "is that we can now roll out many different clinical and administrative applications built to run over the network – with all the time and cost-saving benefits of Java technology.

For more information about Random Walk Computing, visit http://www.randomwalk.com.

simultaneous subscribers over the Internet or through internal networks.

Java development tools for every need

Already, the variety of available Java development tools is so broad that you'll have no trouble finding the right toolset for your needs. To select the best Java development tool for you, focus on three criteria: developer experience, application type and development platform.

Java code without Java programming. Unify Corp.'s (http://www.unify.com) recently announced VISION/Web is the first advanced client/server development environment to generate Java code without the need for Java programming and includes powerful application management capabilities for high-end applications, so administrators can centrally manage distributed applications without help from developers. Unify VISION/Web applications are management-ready and allow end-users to measure and control the total performance of their business-critical distributed applications.

Carla Schneiderman, Unify's vice president of marketing, notes many reasons customers like the Java platform and particularly cites "the ability to move existing client/server applications to the web immediately."

Leverage for business-critical applications. Building on extensive experience in distributed systems and high-level security, Open Horizon, Inc. (http://www.openhorizon.com) offers software products and services that enable development organizations to leverage the Internet as a platform for business-critical applications.

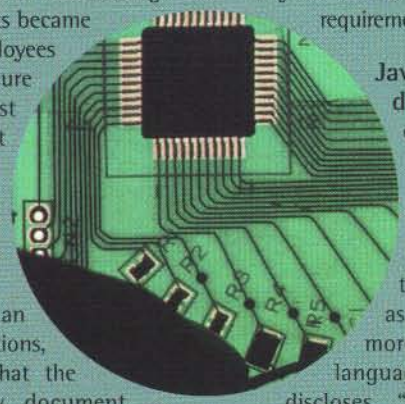
Open Horizon's Ambrosia Event Management System, which has been certified as 100% Pure Java™, is the first event management system for business applications within an enterprise and across the Internet. Ambrosia provides core services, including publish/subscribe messaging, guaranteed message delivery, comprehensive security, centralized administration and transactional support.

Development organizations using Ambrosia can quickly build distributed business systems in which individual applications or components can securely and reliably communicate discrete information "events" to other users and applications on the network.

MAINTAINING SAFETY WITH A JAVA COMPUTING SOLUTION

Compliance with European guidelines and governmental regulations on hazardous material documentation is a complicated but essential task. Hoffman La-Roche, a Swiss multinational manufacturer of chemicals and pharmaceuticals with over 60,000 employees and operations in more than 100 countries, was struggling to ensure the timely delivery of safety information. That often took weeks to copy and distribute. Sometimes it was actually obsolete before it reached its destination.

Initially, Roche used a report writer to print its safety data sheets and distribute them to employees. Soon, however, printing and distributing the paper data sheets became unwieldy and employees could never be sure they had the most accurate and recent information.



The need: Cost-effective, flexible, cross-platform

After looking at an assortment of solutions, Roche concluded that the various proprietary document handling systems it checked out were too restrictive, expensive and hard to use.

Roche wanted a solution that would be cost-effective, so the company could keep collection and dissemination of data reasonably economical.

The new solution also had to be flexible enough to handle a range of data types – including textual descriptions, graphics of molecular composition and specific caution notices for a large number of substances.

Finally, the solution had to function across Roche's heterogeneous computing environment so employees would be able to access it from any computing platform worldwide.

The answer: Java computing

Roche turned to Ergon Informatik, a foremost software development firm and systems integrator based in Zurich, Switzerland, which created a Java based application that retrieves product safety information from the corporate database and rolls it up so that it can be instantly browsed by Roche employees worldwide. In this way, datasheet information remains current and much of the expense of distribution can be eliminated.

"Java computing offers the advantage of cross-platform deployment and combines many new technologies, including object-oriented programming, module orientation and garbage collection," explains Patrick Burkhalter, president of Ergon. "That's why it meets our development requirements so well."

Java computing development efficiency

"Our programmers working in the Java language are nearly four times as productive as those working in more conventional languages," Burkhalter discloses. "The language is simple and the GUI is easy to use. You don't have to worry about memory leaks and pointer errors like you do with C or C++."

Projects that take Ergon staff a month to complete in C require just a week using the Java language. The Java platform also enables Ergon to build hardware-independent products and enjoy an ease of use not available from any other source. No wonder Burkhalter estimates that within two years, over 80% of Ergon's work will be written in the Java language. He expects that the company will abandon C and C++ almost entirely, except where it's absolutely necessary.

"Java computing is not only the language of the future," Burkhalter declares. "It's the operating system of the web."

Developers at Open Horizon find the Java language to be the most productive for complex applications. It's ideally suited, they say, for building object-based business applications running on the Internet and corporate intranets.

WHY 100% PURE JAVA COMPUTING?

Java platform-independence and other strengths work as long as everyone continues using the same Java computing standard and resists the urge to add non-uniform features that destroy its portability.

The dangers of contaminated Java products

Contaminated, non-standard Java technology loses its platform-independence and its ability to ensure a secure computing environment. Which means that contaminated Java technology simply isn't Java technology at all. But some might still claim it's Java computing, even though it's a proprietary knock-off that can't do the job.

"100% Pure Java means that 100% of Java's benefits are available to a system," notes Random Walk's Lehrfeld. "Once you begin using native code, those benefits begin to disappear."

This is always a risk. In Microsoft's ActiveX component software strategy, for instance, Java applets are swallowed whole (encapsulation) and are no longer able run on anything but Microsoft's proprietary Win32 platform.

Many believe that genuinely platform-independent computing depends on establishing and enforcing open, nonproprietary standards for the Java platform. Both end-users and developers need assurance that programs written in the Java language really will run flawlessly on any Java compatible platform or device.

The 100% Pure Java Initiative

That's why more than 100 vendors, led by Sun Microsystems, have launched the 100% Pure Java Initiative defining an objective, consistent portability standard for Java applications. Only products that have achieved 100% Pure Java certification can exhibit the "100% Pure Java" logo.

"100% Pure Java certification will differentiate companies like Sanga, with our real, pure Java solutions, from all of the smoke in the marketplace," says Maine of Sanga International. "There are many others who claim to have competitive products, but may write their server component in C or C++ — therefore not getting any of the benefits of Java computing. Sanga's Enterprise Solutions will be even more valuable with the 100% Pure Java logo by its side."

Maine continues: "100% Pure Java is especially relevant to the server side. You can put a Java server on any hardware and incorporate any corporate

database. Customers will no longer be held hostage by vendors and can now plan to incorporate any revolutionary new hardware into their shops, secure in the knowledge that their applications will run on anything."

The 100% Pure Java Initiative uses a variety of testing certification, technical assistance, education and co-marketing programs to create and support a compatible Java environment. When you see the 100% Pure Java logo, you know you'll get:

- ***Multiplatform capability: not just "Wintel," and not just the Mac.***
- ***Higher-quality Java applets, applications and components.***
- ***Greater satisfaction,*** because you'll be able to recognize products that won't jeopardize your organization's cross-platform computing capabilities or the security of its transactions.

Already several products have won the right to carry the 100% Pure Java logo, including Open Horizon's Ambrosia, IBM's Host On-Demand, Corel's Office for Java and Oracle's Developer/2000 Web Cartridge.

"With the 100% Pure Java logo," declares Sanga's Maine, "you won't have to question the purity and portability of software you're considering."

Open Horizon president and CEO Nicholas Zaldastani agrees. "Whole industries are relying on the emergence of technologies that can synthesize information from disparate sources," he says. "Java based applications, like those built with our Ambrosia Event Management System, can run anywhere, can draw on corporate databases and wire services, and can publish findings to thousands of subscribers securely over the Internet.

Java computing completes some of IT's most important trends. Already, the Java environment has been put to work linking diverse networks and architectures and migrating processing power from mainframe and desktop to network, all the while balancing the needs of systems administrators, end-users and the enterprise.

Some of the most challenging problems facing your organization can be solved by Java computing. And you don't need to replace current IT investments to benefit from the Java platform — you can revitalize your existing IT environment by simply adding appropriate Java computing capability incrementally, as the enterprise's needs dictate.

"The goal of all business is to achieve greater profitability in some way, either by increasing productivity or decreasing expense," Random Walk's Lehrfeld reminds us, "and the Java platform is an especially versatile tool for providing those benefits."

If you have questions regarding the 100% Pure Java program please send them by e-mail to 100percentpure-program@java.sun.com. You may also call 1-800-JAVASOFT (outside of North America call 1-512-434-1591).

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Tepid Java

Mac OS 8 is the first Apple system-software release that delivers Java support, and the results are merely lukewarm: Apple's Mac OS Runtime for Java (MRJ) 1.0.2 compiler lacks a Java just-in-time (JIT) compiler; this compiler makes running Java applets from your hard disk practically pleasant and running them over the Web tolerably slow instead of intolerably slow. To get ahold of the JIT compiler, you have to wait for MRJ 1.5, which should be available from Apple's Web site by the time you read this.

On the other hand, the Apple Applet Viewer — try saying that ten times quickly — allows you to run Java applets outside the confines of a Web browser. "So what?" you say? Memory, that's what. Even when you have virtual memory turned on (which reduces applications' RAM requirements), Netscape Navigator 3.01 snarfs up nearly 7 MB of RAM and prefers to have closer to 9 MB. Internet Explorer 3.01 is kinder, requiring a minimum of 3 MB and preferring a bit over 5 MB. Apple Applet Viewer, in contrast, runs in as little as 512K of RAM, and it's as happy as a clam with only 1 MB. If you're running a full-blown Java app — Corel Office for Java requires 6 MB, for example — all that RAM can add up.

And while we're talking about Web browsers, you might want to check out personal Web sharing. This new OS 8 feature allows you to transform a folder on your hard disk into a combination personal Web site and file server. You use file sharing's Users & Groups control panel in order to manage access to your site. You can place any type of file in your shared folder, not just HTML files. Web sharing includes a feature that lets your Mac function as a mini TCP/IP file server, displaying the contents of your shared folder, employing a Finder-like interface. Whenever people log onto your Web site, they are able to display your HTML files in a Web browser or download any of your shared files to their computers.

There's a catch, though. To access your shared Web folder, other users need to know either your computer's TCP/IP address or its name as stored in your network's domain-name server. There's no way other people are able to "discover" this information; you have to give it to them. You can call it a security feature if you like. But personal Web sharing is probably not the route you should go if you want to create an international presence for your small business. It's more appropriate for use within corporate or campus intranets.

Help on the Way

Mac OS 8 has a few other nice touches worth a mention. Two "assistants" simplify the task of configuring your Mac. The Mac OS Setup Assistant walks you through basic setup tasks: giving your computer a name, choosing a printer, and the like. The Internet Setup Assistant eases the pain of getting wired: setting up Internet connections, e-mail, a Web browser — even signing up with an ISP.

Another helpful feature is Mac OS Info. This HTML-based online help is chock-full of useful information about the Mac operating system. And it has live links to pages within Apple's Web site, where you can obtain continuously updated information on OS features.

And finally, we couldn't leave a discussion of Mac OS 8 without talking about the new color picker. Desktop publishers will appreciate being able to specify colors in RGB as well as CMYK, and Web publishers will appreciate the HTML color picker, which simplifies the task of choosing browser-safe colors. But our favorite is the crayon picker (see Figure 1). We just wish Apple had included burnt sienna.

The Bottom Line

Mac OS 8 is what we've been waiting for. We were lukewarm about 7.6, but we have no doubt about the value of 8.0. Considering the upgrade's expected street price of $99 (with a $30 mail-in rebate for registered owners of Mac OS 7.6), our recommendation is simple: Do it.

Sure, we would have liked to see more in this OS of what Apple promised for Copland, the original OS 8 (see "The State of 8," August '96, page 69): more flexibility in list views, ultrafast full-text searches of hard-disk files, improvements to the Open and Save dialog boxes. So we're a bit disappointed.

Instead, what we got was a solid new OS release — delivered on time — and no one can complain about that. With Mac OS 8, Apple has proven that the Mac OS is back on track. Let's hope it can keep up the momentum.

Henry Bortman is MacUser*'s technical director.*

The Finder's New Feedback

Don't be alarmed if you are working in Mac OS 8 and suddenly notice that your cursor is mutating. It's just a cue Apple added to the latest incarnation of the Finder, along with a variety of other new functions. Here's a rundown on new cues and commands.

Cue or Command	What It's About
Copy a file or folder	This cursor tells you you're duplicating data when Option-dragging an item to copy it to a new location or moving it to a new volume.
Make an alias	This cursor cues you that you're cloning: Command-Option-dragging an icon now places its alias at your destination — without a trip to the File menu.
Show contextual menu	This cursor appears whenever you press the Control key, to remind you that Control-clicking on a file or folder icon invokes a contextual menu.
Spring a folder open	You can spring a folder open, even when you're not copying or moving a file, by double-clicking on it and holding down the mouse button; then this cursor appears, showing you're in spring mode.
Show original ⌘R	When you click on an alias and type Command-R, the window containing the alias's original file opens, with the file highlighted.
Move To Trash ⌘⌫	At last! The new Command-Delete keystroke combination (the first you should memorize for OS 8) lets you trash files with your fingers on the keyboard.

Rhapsody Tunes Up

As a powerful version of the Mac OS finally steps onstage, Apple's modern OS gets ready for a command performance — sometime in 1998

By Henry Norr

Mac OS 8 and follow-up releases planned for 1998, 1999, and beyond will bring new polish, speed, and stability to the Mac platform. But they don't add up to the industrial-strength operating system many Mac customers have been clamoring for. That role falls to Rhapsody, the all-new OS Apple is assembling with homegrown technologies and new ones picked up with the acquisition of NeXT Software. Many details of the Rhapsody plan still aren't complete, but the outline is now clear:

Platform for a Better Tomorrow

Rhapsody's underpinnings will come mainly from NeXT's OpenStep software (originally known as NeXTstep). The lowest level of the new OS will be a version of Mach, the multitasking OS kernel NeXT has always used. Mach will deliver most of the modern OS features that the current Mac OS is missing: preemptive multitasking, memory protection, and symmetric multiprocessing.

Most industry experts consider Mach to be the most proven, full-featured, and stable modern-OS core — it's been used for years in everything from mainframes to UNIX workstations. Many even assert that Mach is a more robust implementation of a modern kernel than the one used in Windows NT.

Above the kernel level, Rhapsody, like OpenStep, will incorporate the Berkeley Systems Distribution, or BSD, version of UNIX, including its powerful networking capabilities. Also like OpenStep, Rhapsody will rely on Display PostScript, a screen-oriented version of the Adobe page-description language, to draw its screen graphics. Although some Mac advocates hoped Apple would choose QuickDraw GX instead, sticking with PostScript minimizes the risk of delay; in addition, it all but eliminates inconsistency between screen image and printed output, a problem Mac-based publishers have faced for years.

The most distinctive feature that Rhapsody will inherit from OpenStep is its application-development and run-time technology. A suite of object-oriented class libraries built into the OS eliminates much of the grunt work developers normally have to go through when creating applications. That may not sound all that exciting to nonprogrammers, but with luck it will produce something the least geeky of users can appreciate: a steady flow of slick and powerful applications.

In other words, the low levels of the new OS will be technologies NeXT has been polishing for a decade — Apple makes no bones about that. But some important features, most obviously the user interface, will come from Apple's technology portfolio. Apple has decided, after some initial wavering, to base the Rhapsody UI on the Mac look and feel. That means, for example, a Mac OS-style Finder, rather than OpenStep's UNIX-style file browser; a traditional Mac menu bar, instead of NeXT's stacked-menu scheme; and icons on the desktop, rather than only in a side-of-the-screen dock.

Rhapsody in Blue (Box)

Another critical, Apple-inherited feature of Rhapsody for PowerPC will be the Blue Box, a full-blown version of the Mac OS that executes on top of Rhapsody. You won't get preemptive multitasking and memory protection *within* the Blue Box — one misbehaving Mac application can still hold back or bring down other Mac programs — but the offending app will no longer be able to crash the entire system. When one Mac OS program crashes, you might have to reboot the Blue Box, but that should take only a few seconds, since the file system, your network connections, and your Yellow Box (OpenStep) apps shouldn't be affected.

Another major bonus of the Blue Box: Because it is the full Mac OS, everything, including your favorite control panels and extensions, should run — as long as they don't access hardware directly. This is the opposite of the way things would have worked with Copland, Apple's first strategy for a modern OS, which would have broken at least most extensions.

Most of the major technologies Apple has focused on over the last five years — OpenDoc, Open Transport, and most of QuickDraw GX, for example — will be available only in the Blue Box environment. But several more-successful Apple innovations — the QuickTime Media Layer (QTML), including QuickTime VR and QuickDraw 3D; ColorSync; and some GX typography features — will be ported to the Yellow Box. Apple is even promising to implement within the Yellow Box a scripting system based on AppleScript.

Finally, both the Blue Box and the Yellow Box will have built-in Java support. Developers will even be able to incorporate the OpenStep class libraries into Java programs and thus be able to build much richer applications in the new language than with current Java tools.

Combining two distinct application environments on one desktop presents some challenges, and users are sure to encounter some rough edges. It will, of course, be possible to run Rhapsody without opening the Blue Box; conversely, you'll be able to run the Blue Box in full-screen mode, giving you a desktop pretty much like that of today's Mac OS. But if you want to work with Blue and Yellow apps at the same time, things will get stickier: The Blue Box Finder, for instance, will appear, somewhat awkwardly, inside a window within the Yellow Box Finder.

The Rhapsody Plan — to Date

1996

August: Apple cancels developer release of Copland, begins search for alternatives.

December 20: Apple announces its intention to buy NeXT Software.

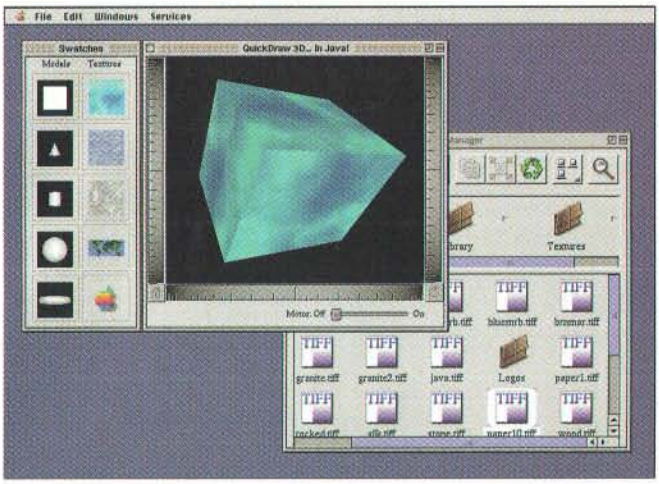
1997

January 7: Apple discloses Rhapsody code name, offers preliminary details on the Yellow Box and the Blue Box.

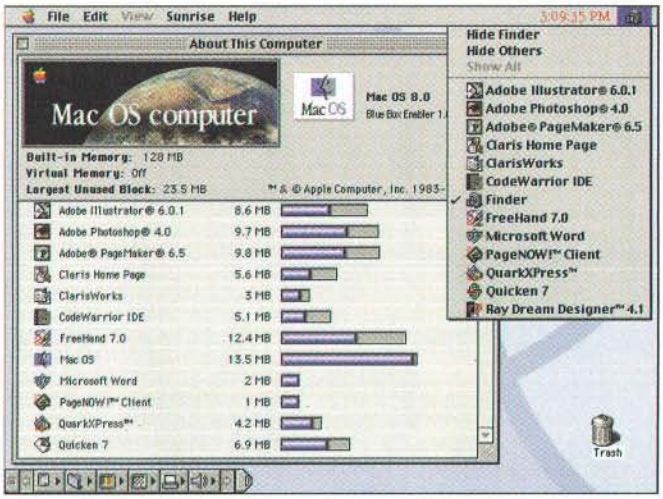
February 3: After considering Copland's NuKernel, Apple announces intent to stick with Mach kernel for new OS.

May 13 – 16 (WWDC): First public demos of Rhapsody for PowerPC (on a Power Mac 8500); developers get "Prelude to Rhapsody" version of OpenStep for Intel systems.

July: Mac OS 8 slated to arrive.
Summer: Developer Release of Rhapsody for PowerPC due.



With Rhapsody, Java applets will be able to utilize many of the core Apple technologies contained within the Yellow Box. In this screen shot, a Java applet uses QuickDraw 3D to render a 3-D object. Note also a very early version of the Rhapsody Finder in the background.



Blue Box or Mac OS? Only your IS manager knows for sure. One way to tell that this is the Blue Box is that it takes advantage of Rhapsody's powerful virtual-memory manager to run a dozen Mac applications without using Mac OS 8's much less robust virtual-memory scheme.

You'll be able to copy and paste between the two environments but not to drag and drop between them. And in some situations, you may have to manage separate network connections, printer drivers, and so on for each environment.

An OS for All Platforms

In contrast to Copland's vague and ever slipping schedule, the timetable for Rhapsody has been set clearly by Apple's new management, and they say they'll to stick to it. The Developer Release — a preliminary, incomplete version of the new OS, consisting mainly of a PowerPC port of NeXT's existing technology — should reach developers early this summer. Apple plans to deliver a much more complete version, called the Premiere Release, next January, not only to developers but also to "early adopters" — enthusiasts, power users, corporate managers, and anyone else champing at the bit to try the new OS.

The Big Bang is scheduled for the summer of 1998, when the first complete version of Rhapsody — currently known as the Unified Release but sure to have a jazzier name by then — should be ready.

Through the remainder of this century and into the next, Apple will pursue a dual-OS strategy: It will continue to update the classic Mac OS but will also push ahead with follow-ups to Rhapsody. The relationship between the two will roughly parallel that between Windows 95 and NT today: Rhapsody will initially appear mainly on high-end systems, and most small-business, education, and home users will stick with Mac OS 8 and its direct descendants into the next millennium.

Apple has committed to making Rhapsody run on all Mac models shipping on or after the announcement of the new OS, last January: all PCI-based Power Macs, the PowerBook 1400 and later laptops, and the Performa 5260 and later. That leaves out not only all Macs with 680x0 processors but also first-generation Power Macs — the 6100, 7100, and 8100.

But users of older PowerPC-based Macs should be able to run applications written for Rhapsody, even if they can't run the new OS itself. In a surprise announcement last May, Apple said that it will port the Yellow Box application environment to the classic Mac OS (see August '97, page 22). Users running Rhapsody applications without Rhapsody naturally won't enjoy the extra speed and stability of the new OS and there may be other Rhapsody-specific features that will be disabled while applications are running under the Mac OS, but at least these users will be able to run the same programs as their Rhapsody-using colleagues.

The most confusing aspect of Apple's OS plan is its cross-platform dimension: NeXT has long sold a version of OpenStep for Intel-based hardware, and Apple intends to do likewise with Rhapsody. The Intel version will have nearly all the features of Rhapsody for PowerPC, even the same Mac-derived look and feel. Only one thing will be missing: the Blue Box.

The last leg of the cross-platform plan is known as the Yellow Box for Windows. A derivative of NeXT's OpenStep Enterprise product, the software makes it possible for Windows users to run OpenStep applications without forsaking either flavor of Windows (or Windows applications). Like the Mac OS version of the Yellow Box, the Windows release will provide the class libraries and run-time environment OpenStep applications require, but in this case, such applications will have a Windows user interface instead of the Mac look and feel. To encourage developers to produce Rhapsody applications by guaranteeing them a wide market, Apple will let them distribute the Yellow Box for Windows royalty-free with any app that requires it.

OS 8 or Wait?

Apple's modern OS is finally coming into focus, and unlike the nebulous Copland strategy, the Rhapsody plan looks to be a pragmatic road map for delivering a modern OS that will equal, if not exceed, anything else on the market. However, users who are considering whether to wait for Rhapsody should note that the version of the OS that will be feature-complete and the first to boast full Mac OS compatibility won't arrive for another year.

Rhapsody, when it does arrive, may very well blow anything the Mac OS has to offer right out of the water. But even if Apple's aggressive developer-tools strategy is successful, it will be many months after the Unified Release of Rhapsody ships before a robust suite of Yellow Box applications — which is what will be necessary to take full advantage of the new OS — is available. Meanwhile, Mac OS 8 is real, it's here now, and it's a vast improvement over whatever version of the Mac OS you're currently running.

Henry Norr is editor emeritus of MacWEEK.

1998

January: Expected Premiere Release of Rhapsody for PowerPC, including a limited version of the Blue Box.

Summer: Allegro update to Mac OS — no details yet.
Summer: Unified Release of Rhapsody due, with full Blue Box, QTML, and all other promised features.

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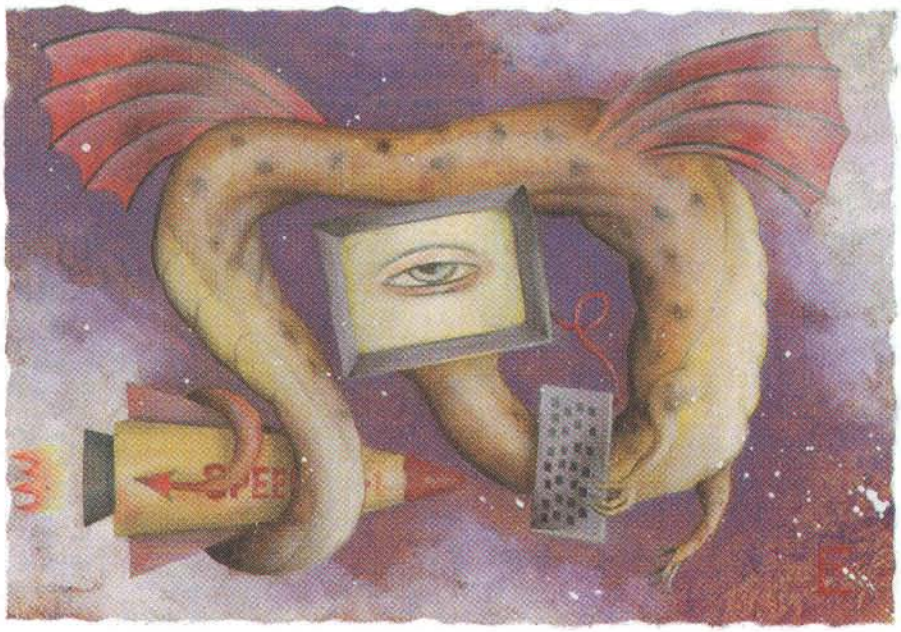


Illustration · Elizabeth Lada

MacUser LABS

IF SPEEDING UP PHOTOSHOP is your top priority, conventional wisdom says you should simply stuff as much RAM into your computer as you can afford. The truth, however, is a little more complex. RAM remains essential, but you can spend even less time staring at the progress bar if you take a moment to tune both your machine and Photoshop itself to fit your needs.

Follow along as we take a look under the hood of Photoshop 4.0. The following tips and tricks will not only help you understand what makes the application go but they'll also help you make it fly like never before.

Rev Up the OS

The first thing you can do to speed up Photoshop is tweak your Mac's operating system. To begin, go straight to the Memory control panel and turn virtual memory off. Photoshop has its own virtual-memory scheme, optimized specifically for dealing with images, and Mac OS-based virtual memory only gets in its way. You should use OS-based virtual memory only if you have less than 24 MB of RAM.

Next, while you're in the Memory control panel, set the disk cache low. Adobe recommends setting the cache to 96K or less for Photoshop 3.0 and 128K or less for Photoshop 4.0. A disk-cache setting that's much higher can bring Photoshop to its knees. Unless you have another application that benefits dramatically from a large disk cache (most graphics apps do not), set the cache to its minimum setting (32K) and leave it there.

Maximize Your Memory

When it comes to speed, the bottom line for Photoshop users is often RAM — having enough of it and allocating it so that the application doesn't resort to accessing the scratch disk (usually the hard disk). Photoshop uses the hard disk as a backup when it runs out of RAM. Since even the fastest disk drive is slower than RAM, relying on the scratch disk as a RAM substitute causes the screen to redraw more slowly. Painting with large brushes and applying filters can also become painfully poky.

In the new Photoshop, however, you'll find that some things work more quickly and smoothly than before, regardless of how much RAM you have. For instance, you'll probably notice right away that the screen redraws almost instantaneously and that there are fewer jaggy artifacts in zoomed-out displays. The reason is a new addition to the application's memory-management system, the Image Cache, which uses a limited form of *pyramid sampling*. Several zoom levels of an image are held in the cache. This means that Photoshop doesn't have to recalculate the anti-aliasing each time you change zoom levels and that when you work with layered files, Photoshop uses the cached screen-resolution image, rather than the complete image, to quickly perform compositing and blending between layers.

The catch is that although the Image Cache speeds Photoshop, using it also increases the amount of RAM you need in order to work with the image — the image's RAM footprint. As a result, you need to choose your Image Cache settings with care.

Ideally, you should tune the cache setting to correspond to the size of your largest files. Setting the cache higher than

MacUser's Mouse Ratings
Which RAID array or multiprocessor machine will suit your speed needs? Find the answer in *MacUser*'s reviews database, at www.macuser.com/mouse.html

MacUser's CPU Report Cards
If you're looking for a faster processor, check out MacBench scores and mouse ratings for shipping Mac models at www.macuser.com/cpu/

necessary slows down file opening and takes up extra RAM. Setting the Image Cache's cache levels (File: Preferences: Image Cache) to 2 increases the RAM requirements for each file you work with by about one-third. (Setting it to 1 turns it off.) The increment of RAM increase diminishes as you increase the cache size. For example, the difference between a cache-level setting of 4 and 8 is quite small. As a result, if you work on layered files at zoom levels other than 1:1, using the Image Cache is worthwhile, even if the extra overhead appears to drive you to the scratch disk.

In general, the default setting, 4, provides adequate caching for most users, but if you work on very large files, set it higher. A setting of 8 caches all the zoom levels from 6.25 percent to 100 percent, so if your image is so large that you can see the whole image only when you zoom out to 6.25 percent, you should set the cache level to 8. If your images open in the 50-percent view, set the cache level to 2. If they open in the 33.3-percent view, set the cache level to 3, and so on.

Get the Right Amount of RAM

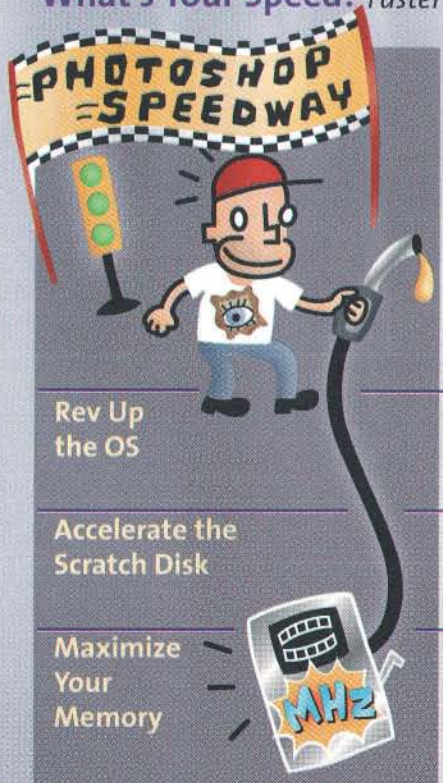
If Photoshop is still sluggish and you wonder whether more RAM would solve the problem, you can apply a tried-and-true formula. Conventional wisdom says to multiply the size of your largest image by 3 or 5 to find the right amount of RAM for you. The problem is that this conventional wisdom is pretty vague — if you're working with a 20-MB image, the difference between three times the file size and five times the file size adds up to a significant chunk of change. Do you need 100 MB of RAM or just 60?

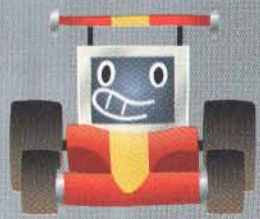
Actually, the amount of RAM you need depends not only on the size of your image but also on what you're asking Photoshop to do. If you're manipulating the *entire* image, Photoshop will use an amount of RAM that's only a little more than twice the file size. Photoshop keeps two copies of the image — the original (the one you get when you press Command-Z to undo an operation) and the new, edited one. It also needs a little memory in order to calculate the global change.

However, the RAM requirements actually increase substantially if you manipulate specific *portions* of an image as opposed to the whole. When you make a selection in Photoshop, the application treats it as an 8-bit channel, a grayscale image with 256 shades of gray. If your image is grayscale, this new channel will be the same size as the entire image. You'll need 3K of RAM for each 1K of image: one each for the Undo buffer, the selection mask, and the edited image. If your image is in color, the selections will take up proportionately less RAM — one-third the file size for RGB or Lab Color and one-fourth the file size for CMYK.

Using floating selections (as opposed to layers) increases the scratch-disk requirements still further, because Photoshop has to keep five separate images in memory: the original image, the mask for the floating selection, the previous and new contents of the floating selection, and the image that results when you composite the floating selection with the original image. If you're working in color, all except the mask for the floating selection

What's Your Speed? *Faster Photoshop at your own pace*





	Cruiser	Stock Car	Formula 1
Rev Up the OS	turn off virtual memory; set disk cache low		
Accelerate the Scratch Disk	defragment your hard disk	partition your hard disk, or get a separate hard drive	buy a RAID array
Maximize Your Memory	set Photoshop's Image Cache correctly	get the right amount of RAM: 2x file size for global edits, 4x file size for compositing	get as much RAM as can fit in your machine
Pump Up Processor Power		buy a faster Mac	buy a multiprocessor Mac

Illustration · Mike Lee

will be full-color copies, so the total RAM will end up being more than four times the image size. If you're using Photoshop 4.0, it's likely that you're using layers more than floating selections, but you should be aware that the overhead is very similar.

The upshot of all this is that if your work consists primarily of global editing — adjusting an entire image's tone, color balance, and sharpening, for example — you may not even need as much as three times the file size in RAM. You can probably get by very well with a little over twice the file size. If, however, you're doing compositing with multilayered images, you may need closer to five times the file size in RAM to work at maximum efficiency.

Keep Your Scratch Disk Snappy

One way to know if you're working with a RAM-starved setup is if you see the message "Preparing to Save" accompanied by a progress bar when you save your images. This is a sure sign that Photoshop is making heavy use of the scratch disk. If you find yourself in this worst-case scenario, a faster hard drive will help but you probably just need more RAM. It's not always convenient to run out and buy 64 more MB of RAM or a new hard drive, however, so luckily there are some other things you can do to ameliorate the situation.

First, make sure your scratch disk isn't fragmented. At the least, use an optimizer utility — such as Speed Disk, which is included in Symantec's Norton Utilities — on a regular basis. The best way to make sure your scratch disk is unfragmented is to dedicate a separate, *empty,* hard disk or partition on your hard disk, to serve as Photoshop's scratch disk. You can choose a new scratch disk by changing your application preferences (File: Preferences: Plug-ins & Scratch Disks).

Shell Out for Swifter Hardware

What if you've already tuned your OS, set your Image Cache correctly, partitioned and/or defragmented your hard disk, and put as much RAM into your machine as it can hold? If Photoshop is still moving too slowly for your liking, then it's time to dig deep within your pockets.

If opening and saving files is still unbearably slow, you need to buy a faster hard drive. A RAID (redundant array of independent disks) can be much faster than a single hard drive, particularly if the disks that constitute the array are connected to separate SCSI buses. Several vendors now offer dual-channel SCSI cards that plug into PCI slots, giving your Mac two new SCSI buses in addition to the built-in ones. Most offer Fast-and-Wide SCSI-2, and a growing number support the even faster Ultra SCSI (also known as Fast-20 Wide). A RAID on a dedicated SCSI bus is considerably faster than those that share the bus with other devices, and a RAID that spans separate buses is faster than one in which all the hard disks are on the same bus.

Then there's the matter of your Mac's processor. If you have a fast hard drive — and have followed all these speed tips to boot — and Photoshop is still too sluggish, your only recourse is to upgrade to a faster Macintosh or to a multiprocessor machine.

Photoshop is one of the few programs that really exploits the extra power of multiprocessor Macs. For example, a dual-processor 180-MHz-604e-based machine generally outperforms a single-processor 250-MHz-604e-based machine on almost all Photoshop tasks. Apple, UMAX, and DayStar Digital all offer dual-processor machines, and DayStar also offers the quad-processor Genesis MP 720+ and Genesis MP 800+ models.

Bear in mind that applications must be specially written to take advantage of multiple processors and that as a result, the list of MP-aware applications is still fairly short. However, for those who live in Photoshop and believe that time is money, a well-configured multiprocessor machine will make Photoshop fly. Just make sure you've eliminated all the other bottlenecks so the processors can run at their maximum efficiency.

Photo Finish

Photoshop is a program used for all sorts of projects, from cleaning up photographs to creating complicated works of art. As a result, it's difficult to make recommendations about how to speed it up that will do the trick for everyone. Look at the tasks in your own work that seem to slow Photoshop to a crawl, and figure out where your biggest bottlenecks are. Once you've done so, you can put the information in this story to the best possible use.

Bruce Fraser is a MacUser *contributing editor and the coauthor of* Real World Photoshop 4 *(Peachpit Press, 1997).*

Resources to Run With

Once your machine is up to speed, what are you going to do about yourself? Put those bionic dreams aside, and pick up a book! Here are a few titles that can help you improve your skills and work as efficiently as is humanly possible.

You should be able to find, or order, any of these books at your local bookstore. There are also several good resources online. For starters, take a look at Amazon.com (www.amazon.com), the Adobe Press site (www.adobepress.com), or CBooks Express (www.cbooks.com). · *Scholle Sawyer*

Adobe Photoshop: A Visual Guide for the Mac
Bert Monroy and David Biedny
Addison-Wesley Publishing Company, 1996
This well-illustrated step-by-step book teaches Photoshop techniques and features by leading you through projects.

Classroom in a Book: Adobe Photoshop 4
Adobe Systems Technical and User Education Group
Adobe Press, 1997
Learn Photoshop the Adobe way with this official training workbook and CD-ROM.

Photoshop 4 for Macintosh: Visual Quickstart Guide
Elaine Weinmann and Peter Lourekas
Peachpit Press, 1997
Brush up your skills or get the basics down with this straightforward reference book.

Photoshop in Black and White
Jim Rich and Sandy Bozek
Peachpit Press, 1995
Use this succinct guide for preparing grayscale and black-and-white images for print.

Real World Photoshop 4: Industrial Strength Production Techniques
David Blatner and Bruce Fraser
Peachpit Press, 1997
Find expert answers to all your production questions — from how to calibrate a monitor to how to retouch a photograph.

Real World Scanning and Halftones
David Blatner and Steve Roth
Peachpit Press, 1993
Get quality images out of scanners, laser printers, and imagesetters.

Adobe Photoshop
Adobe Systems, San Jose, CA
800-833-6687
716-447-7303 (fax)
www.adobe.com

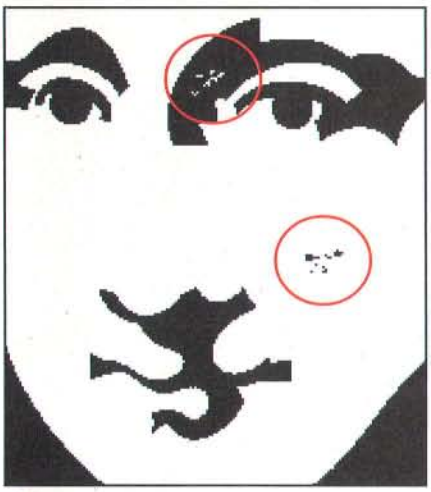
By Chris Lehan
graphicsuser@macuser.com

Fine Lines

Whip ragged line-art scans into shape with this quick Adobe Photoshop trick

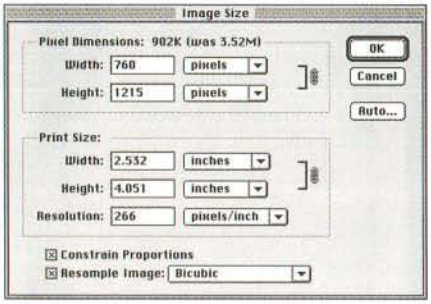
Rough edges are a part of life, especially when it comes to line-art scans. Whether your own scanner isn't quite up to par or your clients tend to give you low-quality images (especially — heaven forbid — by fax), line art often ends up less than perfect . . . or even just plain bad.

When faced with the ragged and the jagged — and no opportunity to rescan — most people break out Photoshop's Pen tool and carefully redraw the image's outlines. However, this



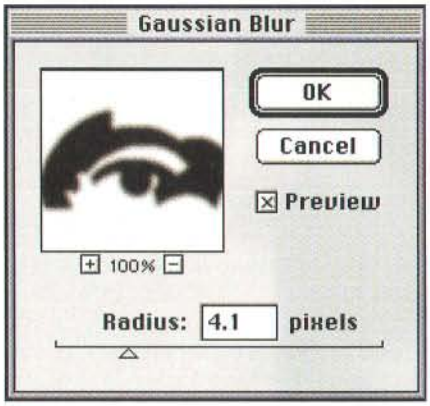
1 Pencil out major glitches.

Begin by cleaning up big imperfections, such as those caused by dust, scratches, and missing pixels. You could use the Eraser tool to rub out unwanted black pixels and the Pencil tool to cover up white pixels, but we have an even better tip. Instead, choose your Pencil tool and press D on the keyboard to set the foreground and background swatches to the default of black and white, respectively. Once you've done this, you can quickly use the Pencil tool to eliminate either black or white pixels by using a simple keyboard command. Just press the X key, and Photoshop will swap the foreground and background colors, so you can choose to write with either black or white. We needed to eliminate some black pixels on the cheek, so with the default colors set to black and white, we pressed the X key to make white the foreground color and then penciled out the black pixels. We then pressed the X key again and scribbled away at the glitch in the eyebrow.



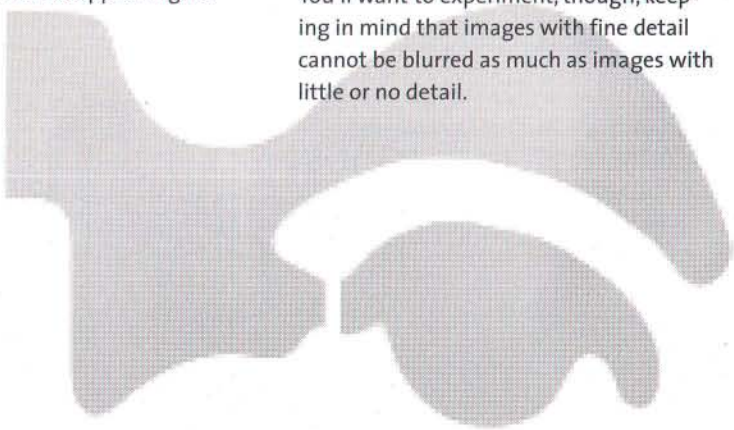
2 If your image is a bitmap, convert it to grayscale and then resample it to get the right resolution.

Photoshop filters don't work in Bitmap mode, so if your image isn't already in Grayscale mode, you'll need to convert it (Image: Mode: Grayscale). We liked our image's size, so we chose a size ratio of 1. We then resampled the image (Image: Image Size) so that its resolution would fit our needs. The amount you should enter depends on how your image will be used. For Web graphics, a resolution of 72 ppi (screen resolution) is sufficient. If the image will be used for printing, you may need a resolution of 266 ppi or higher.



3 Soften rough edges by applying a Gaussian blur.

Next, we softened our image's ragged edges by applying a Gaussian blur (Filter: Blur: Gaussian Blur) to the whole thing. Don't be alarmed that the edges look fuzzy — it's part of the process. We'll show you how to fix them later. The Gaussian Blur filter is tied to resolution, so you'll need a larger blur at a higher resolution. There are no hard and fast rules, but you might start by applying 1.0 to 1.2 pixels of Gaussian blur for every 72 ppi of image. You'll want to experiment, though, keeping in mind that images with fine detail cannot be blurred as much as images with little or no detail.



Stock Images
Find your own Mona Lisa where we did — in the Dynamic Graphics collection
www.dgusa.com

Stock Image Distributor
Image Club, Calgary, AB, Canada
800-661-9410 or 403-262-8008
www.imageclub.com

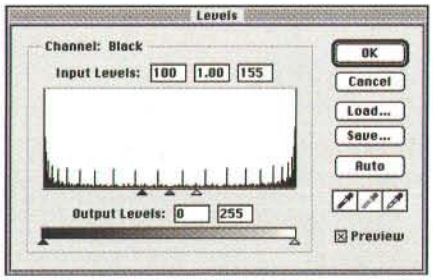
tedious technique is really worth the time only if the artwork is simple or demands the sharpest-possible detail. A much quicker way to improve the overall appearance of your line art — without hanging up your workflow — is to take advantage of Photoshop's powerful filters.

Here we'll show you how a carefully applied Gaussian blur and some tweaking of Photoshop's Levels settings can smooth out even the roughest of edges in one fell swoop. You may end up with sharper lines if you completely redraw them with Bézier paths, but by following these six steps, you can dramatically improve the appearance of poor-quality line art in a fraction of the time.

Chris Lehan is an electronic-prepress manager for a printing company and also teaches classes in Adobe Photoshop and the Internet for a technical college in Minneapolis, Minnesota.

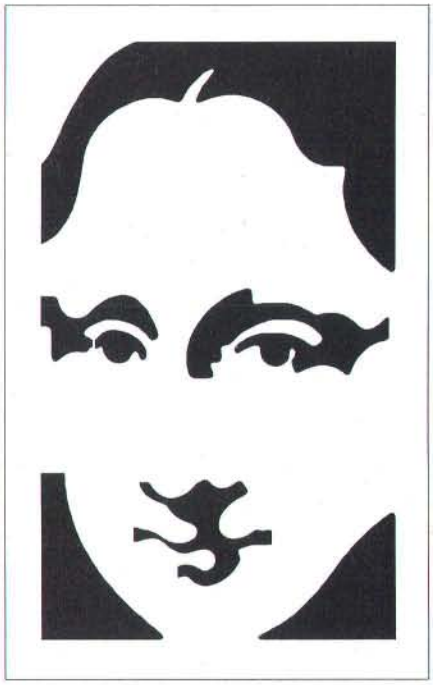
4 Make sure you haven't over- or underblurred.

So, how can you be sure that you've selected the optimum amount of Gaussian blur? It will depend on your image and the amount of detail in it. Using our Mona Lisa as an example, here are some things to look for. The top example was not blurred enough. You can tell because although it's a bit smoother, the edges still appear coarse. The bottom example has been blurred too much. The edges are much softer, but the image itself is blown out. It's wise to compromise between the above two examples. If necessary, you can isolate very sensitive areas and blur them less.



5 Firm up fuzzy edges by adjusting levels.

Next, use Photoshop's Levels to firm up the fuzzy edges. If you have Photoshop 4.0, use a levels-adjustment layer (Layer: New: Adjustment Layer: Levels); if you have an older version, use Levels (Image: Adjust: Levels). The position of the black and white input sliders in the Levels dialog box determines how many shades of gray the image has and therefore how sharp it will look. Pulling the black input slider to the right forces gray areas to black, and pulling the white input slider to the left forces gray areas to white. To make your line art sharp, pull the black and white sliders close to the middle slider. Make sure to pull both sliders equal distances to ensure the image's integrity.



6 Change the image's mode and file format to fit its destination.

Which mode and file format your image should be in will depend on the medium in which it will appear. Our image was intended for offset printing, so we converted it back to Bitmap mode (Image: Mode: Bitmap), selecting 50% Threshold in the Bitmap dialog box. We chose to use the Bitmap mode because it can reduce file size by as much as 85 percent. If your image is destined for the Web, choose Grayscale or Indexed Color. Finally, we saved our file (File: Save As) in TIFF format. For print, TIFF or EPS is usually the best choice, and if you'll be using your line art on the Web, you'll want to save it as a GIF file.

These Friends of Mine (Philip Michaels)
To see the site that started it all, go to www.etext.org/friends/phil/phil.html

Searching the Web?
Take your pick of methods at www.yahoo.com/Computers_and_Internet/Internet/World_Wide_Web/Searching_the_Web

By Jason Snell
jason@macuser.com

When Hits Are Misses

Nothing's unique on the Net, not even you, so how you search determines what you find

I HADN'T REALLY REALIZED how important Internet search engines have become until a friend of mine got an angry e-mail from himself.

To be more specific, the angry missive came from an Internet user who happens to share the same name as my friend Philip Michaels, a humor writer whose works appear on several Web sites. This *other* Philip Michaels complained that his friends couldn't find his Web pages, because every Internet search for his name turned up my friend's Web pages.

Setting aside the idea that someone could send an e-mail complaining about a person using his own name, this whole incident points out just how reliant on search engines all Net users have become. The Internet has become so big that randomly clicking on hyperlinks no longer leads you where you want to go. So instead, we've turned to two different ways of finding what we're looking for on the Net — directories and search engines — and often we use the wrong one.

Make Me a Match

When you're looking for a site devoted to a particular topic, directory sites are the place to start. These sites, including Yahoo! and LookSmart, offer orderly listings created by a team of editors who've combed through the Internet and categorized sites based on their subject matter. Directory sites such as Yahoo! try to be complete guides to the Web and will include just about any submitted site in their listings. Others, such as LookSmart, are more selective and hand-pick a few sites they consider "the best of the Web." The advantage of directory sites is that you can quickly find at least one site that covers just about any topic imaginable.

But there are a lot of times when searching in Yahoo! or its cousins doesn't help — for instance, if you're looking for a very specific topic that might be mentioned on only a handful of Web sites or if you're trolling the Net looking for any mention of a given topic. For that, you need a search engine, which looks through every word of every page on the Net for your key words. That's where Philip Michaels comes in.

Paging Philip Michaels

Search engines send out "robots," automated Web browsers that surf endlessly from link to link, keeping track of what text appears on Web pages. As a result, when you use Infoseek, Excite, or AltaVista, you're combing through a massive database.

The big advantage to this is that you can learn things you'll never learn from a directory. For example, I can do a search to find *every single* reference to *Jason Snell* on the Net. The problem is that you're searching by brute force. You're looking for a needle in an Internet-sized haystack. The Philip Michaels who wrote to complain about my friend using his name on too many Web pages made this mistake when he treated Infoseek (a search engine) as if it were Yahoo! (a directory).

Even when it's appropriate to use a search engine, you're often going to come up with hundreds or thousands of responses to your queries. However, you don't have to be completely overwhelmed. Almost all search engines let you refine your searches, for example, by looking for pages that have one term but not another. If you pick a search engine and learn its commands, you'll save huge amounts of time by refining your searches.

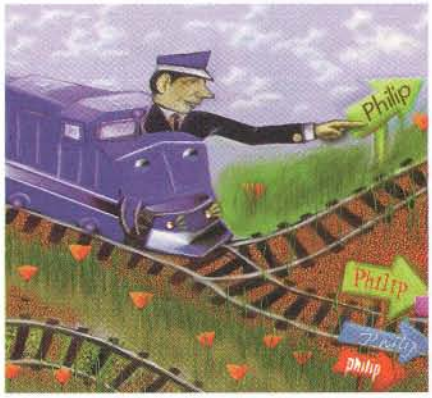


Illustration · Barbara Pollak

Index This, Pal

If you're a Web-site creator, you can also help everyone out by making your site search-engine-friendly. First, be sure that every page is clearly labeled with a unique title that expresses what that page is about — don't just slap the name of your site onto every one of your pages. The titles of Web pages weigh heavily when a search engine decides what pages to display to someone searching the Net.

Once people have reached one of your pages from the outside, they should have the opportunity to explore the rest of your site. Every one of your pages should contain information that lets random visitors know just what site they have found as well as navigational links that will let them quickly click to your site's home page.

If you're doubtful about the power of search engines to drive traffic to your Web site, don't be. One of the Web sites I edit, TeeVee, gets thousands of home-page hits a month. But the most popular pages on that site are always ones that mention hot topics such as *Lois & Clark* beauty Teri Hatcher or the inexplicably popular Tori Spelling. In other words, our most frequently hit pages are the ones that show up when people do search-engine queries.

Which brings us back to the hapless Philip Michaels — all of them. There are two lessons we can learn from this incident: First, if you want your friends to see your Web pages, send them the URLs yourself — don't force them to search through millions of Web pages with a search engine. And second, keep in mind that *nothing* is unique on the Internet. Not only are there at least half a dozen people out there with your name but at least one of them is also probably writing you some nasty e-mail right now.

Senior Editor, Online, Jason Snell is not the rugby player from Australia, the kid from southern California, or the guy who works at Industrial Light and Magic. He is the editor of InterText and TeeVee.

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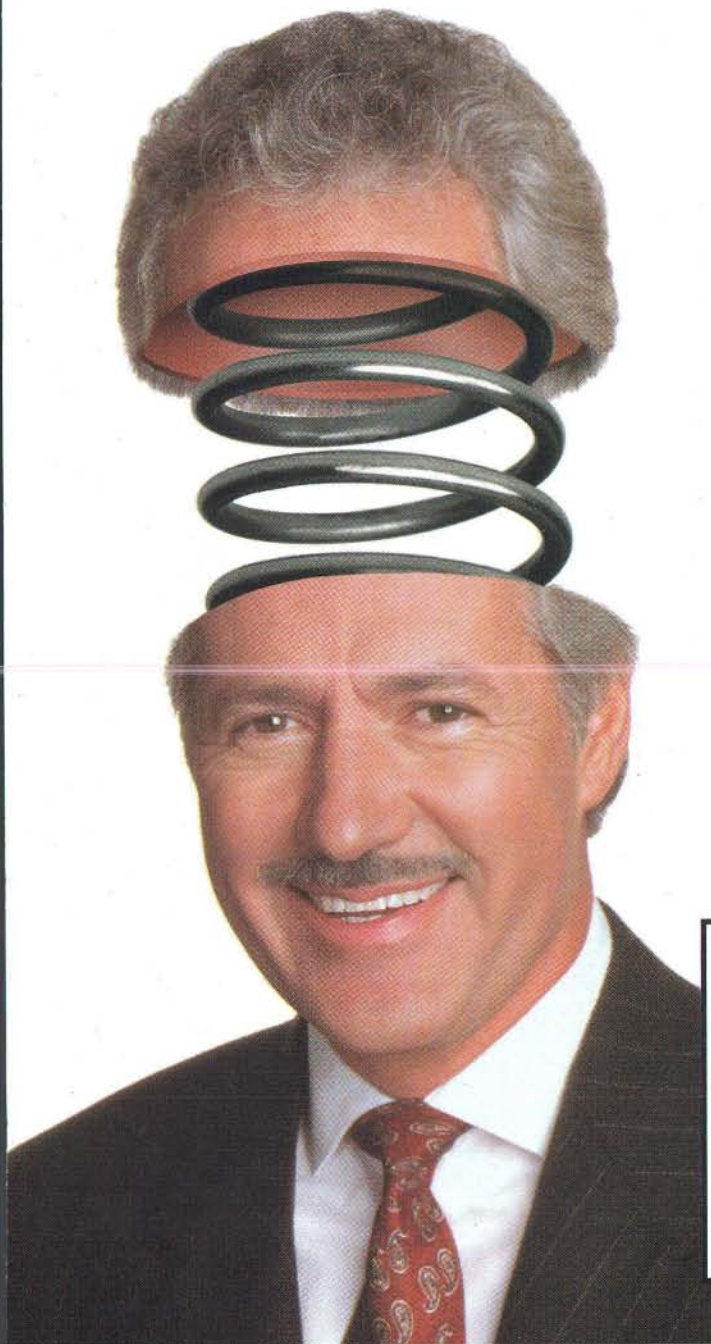

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SCSI Revealed
Learn answers to just about every imaginable SCSI-related question at www.neteng.com/faqs/scsi1.txt and www.neteng.com/faqs/scsi2.txt

By Michael Mathog
smartuser@macuser.com

Untangle Your SCSI Chain

A SCSI chain is all fun and games until you plug in a device that wreaks havoc

Illustration · Randall Enos

Plug and play — yeah, right. Sure, all you have to do to use a new Mac device — such as a hard drive, CD-ROM drive, or scanner — is plug it in and install a little software. But that's no guarantee that it's going to work or that it won't bump some other device off your SCSI chain. Adding a new SCSI device can even make your Mac refuse to start up.

Luckily, most SCSI-chain problems are easy to fix. Making minor adjustments to your devices is usually enough, but more-complicated measures are occasionally required. Here's a guide to which steps to take when, starting from the basics and graduating to advanced techniques.

Problem: Missing devices or a dead Mac. A new device won't mount, an old one has disappeared from the desktop, or you're confronted with a question-mark icon that flashes rudely on your Mac's screen.

Solution: Check the cables, and resolve SCSI-ID conflicts. Don't overlook the obvious. Devices could be missing from your desktop because of a bad connection. Check for loose cables. If that doesn't solve the problem, try swapping cables.

If you're sure the connections are good, next check for SCSI-ID conflicts. Each device must have a unique ID number. First make sure you haven't assigned ID 0, 3, or 7 to a device you're adding to your chain: IDs 0 and 7 have always been off-limits, since they're used by the internal hard drive and the CPU; ID 3 is almost always reserved for an internal CD-ROM drive, which most Macs come with these days.

If you're not using those IDs and you still have problems, it's time to do a more thorough check for ID conflicts. Robert Polic's SCSI Probe (freeware) makes it easy, by giving you a list of the devices your Mac thinks are connected and what their IDs are. If a device isn't on the SCSI Probe list, the first thing to try is holding down the Option key and then clicking on SCSI Probe's Reset button. If a device is still missing, it probably has an ID that conflicts with another device's ID. Change the IDs so that each one is unique.

The degree of difficulty for changing SCSI IDs runs the gamut from being as simple as pushing a button to giving you the feeling that you need to get a degree in electrical engineering. For devices that let you set IDs externally, changing an ID is a cinch — use the well-labeled button or wheel on the back of the device's case, near the power plug. If your device has DIP switches, consult the documentation that came with the device for help. Remember to shut down your Mac and turn off the device before you change an ID.

For devices that don't let you change the ID externally, the process is more difficult. It requires not only opening up the device's case (check with the vendor to make sure this doesn't void your warranty) but also moving *jumpers* — small plastic parts on the controller board. Check the manual that came with your product to find out just which of the myriad jumpers changes SCSI IDs.

Problem: Even devices with unique IDs don't work. You're absolutely sure each device has a unique ID, but you're still having problems — a hard disk or CD-ROM won't mount, or your new scanner software claims it can't find a scanner.

Solution: Make sure the SCSI chain is terminated properly. It's simple with

external devices: Just make sure the last device on the SCSI chain has a *terminator* (a special plug that fits in the SCSI connector). The only exception to this rule is for internally terminated devices, most of which have an external switch for turning termination on or off.

If you have a IIfx, the last device on your chain will require a special terminator (black), which you should be able to get from Mac stores.

Problem: SCSI Probe lists a device but won't mount its volume.

Solution: You may need to reinstall the driver software. Before you do, try holding down the Option key and clicking on the Reset button in SCSI Probe. If that doesn't work, then try reinstalling the driver for the device that won't mount.

Problem: You have too many devices. The SCSI chain is full, but you want to add more devices.

Solution: Add a second SCSI bus. To do so, you'll need to install a NuBus or PCI SCSI controller card. How many devices you can attach depends on which type of controller you install. If you get a Fast SCSI controller, you'll be able to add as many as 7 devices. With a Fast-and-Wide SCSI or Wide Ultra SCSI controller, you'll be able to add as many as 15 devices.

Problem: Your fast hard drive is too slow. You've optimized the hard disk but still get sluggish drive performance.

Solution: Make your SCSI chain good, short, and clean. By "good," we mean having good SCSI cables — one of the cheapest ways to get more speed. In general, thick, short cables are best. To make sure you get a high-quality cable, ask for an impedance-matched cable from a reputable vendor such as APS or La Cie.

Also, to get more speed out of your SCSI devices, make sure the total length of your SCSI chain doesn't exceed the optimal length for the type of SCSI you're using. For original SCSI, the optimal length is 6 meters; for Fast SCSI and Fast-and-Wide SCSI, the optimal length is 3 meters; for Ultra SCSI and Wide Ultra SCSI, keep it under 1.5 meters for 8 devices. When measuring the length of your chain, be sure to add in not only the length of the external SCSI cables but also an extra .3 meter for the cable inside your Mac and a few centimeters for the cable inside each device. If your devices must be far away from your Mac or from other parts of your SCSI chain, it's time to consider getting Differential SCSI — an expensive option.

One other trick for keeping your SCSI chain speedy is to make your scanner the last device on your chain. Scanners, especially older ones, are notorious for sending "dirty" signals, which are difficult for the Mac to understand. If you have the scanner at the end of the chain, its signals won't be as likely to get in the way of those from your other devices.

Problem: Mac operations in general are too slow. Your fancy new AV computer doesn't capture video data at the frame rate you expected, or you wish that disk-intensive operations — such as opening large Photoshop files — didn't take so long.

Solution: Use drives wisely. Upgrade SCSI hardware. If you notice slowdowns primarily when you're using Photoshop, check to see where you've stored Photoshop's scratch disk. If it's on a slow drive, move it to a fast one and watch your work speed up.

A solution that will affect operations in many applications is to upgrade to a faster type of SCSI. Even though you may be tempted to replace your Mac, that's not necessarily the best way to get maximum speed. If the processes slowing you down are opening, copying, and saving files, what you need is a faster SCSI bus and faster SCSI devices. For instance, original SCSI devices have a maximum data-throughput rate of 5 MB per second. By upgrading your SCSI devices and your SCSI controller to Fast SCSI, you get double the bandwidth — a maximum of 10 MB per second. To get the ultimate speed available today, you should upgrade to Wide Ultra SCSI, which has a maximum data-transfer rate of about 40 MB per second. See the "Speedy Upgrades" sidebar for a speed comparison among the various types of SCSI as well as approximate prices for upgrading.

Problems Solved

SCSI can be finicky, but if you follow the rules for termination and for setting proper IDs, hanging a multitude of devices on your computer should be a piece of cake. You can gain some speed by making some of the adjustments we've recommended in this article. Improving your SCSI chain gets more involved if what you want is a significant speed improvement, gobs of additional devices, or an especially long SCSI chain. In those cases, you'll need a SCSI upgrade, which means that you should get ready to part with a good chunk of change.

Former ZD Labs Project Leader Michael Mathog currently heads up Mad Dog Technologies, his own hardware-testing lab. Stomping on any device that gives him trouble is a sanctioned testing method.

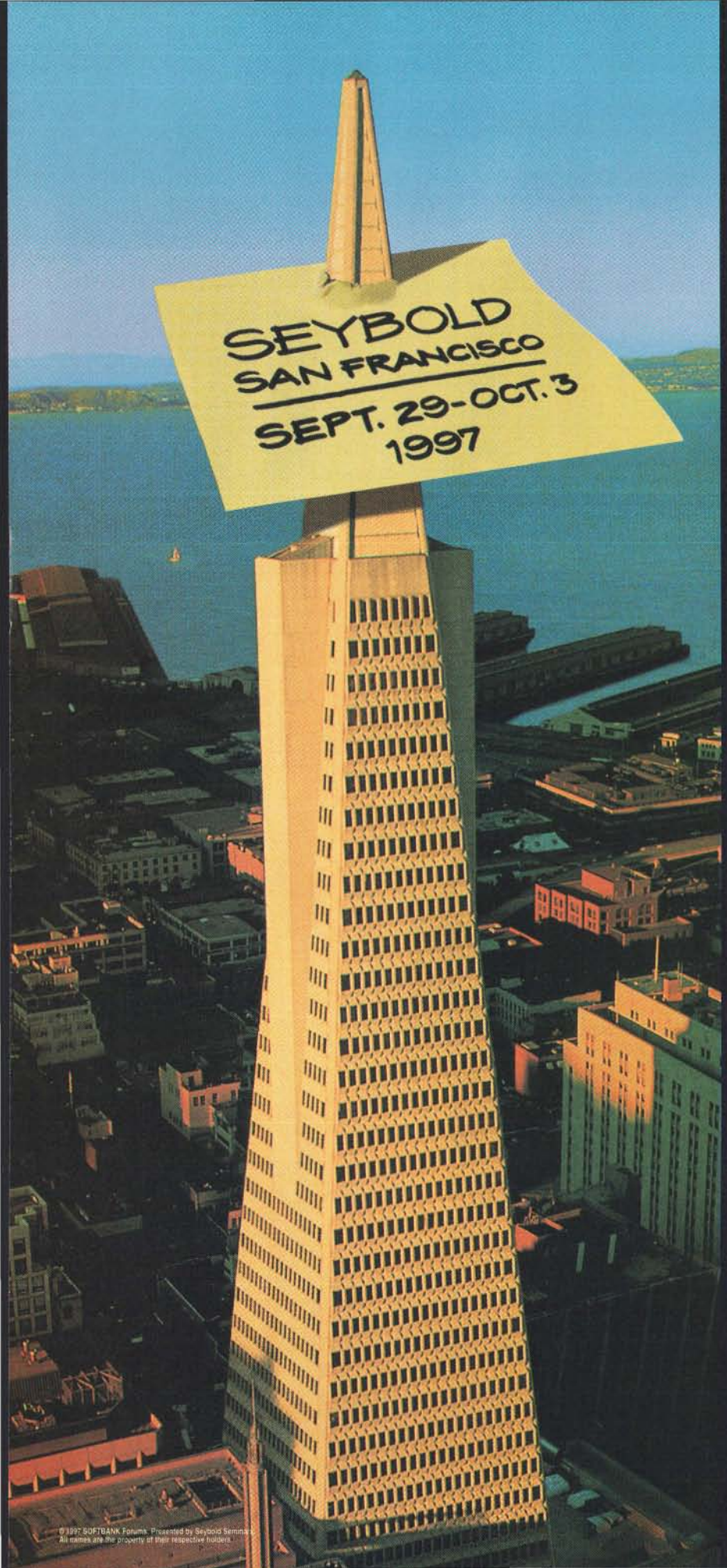
Speedy Upgrades

Every few months, it seems, someone comes out with a faster processor for your Mac. Upping clock speed is what the marketers would have you believe is the most important factor for increasing speed. But you don't have to get caught up in the processor wars. You can often get a greater speed increase by upgrading your SCSI bus than by buying a faster computer.

The data-throughput speeds in this table won't tell you how much faster you can open that fat Photoshop file or perform any of the tasks that are slowing you down. But the table can give you a good idea of how much faster one type of SCSI is than another as well as how much it will cost to upgrade. Ultra2 SCSI and Wide Ultra2 SCSI are future technologies. Their upgrade costs are not yet available.

SCSI Type	Max. Data-Throughput Rate	Approximate Upgrade Costs
SCSI	5 MB/second	NA
Fast SCSI	10 MB/second	controller, $100 2-GB hard drive, $500
Fast-and-Wide SCSI	20 MB/second	controller, $300 (PCI), $450 (NuBus) 2-GB hard drive, $600
Ultra SCSI	20 MB/second	controller, $100 (PCI) 2.2-GB hard drive, $400
Wide Ultra SCSI	40 MB/second	controller, $300 (PCI) 4.5-GB hard drive, $800
Ultra2 SCSI	40 MB/second	NA
Wide Ultra2 SCSI	80 MB/second	NA

Photography · Lon Clark



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Help Folder

Spell checking for power users and ways to make just about any version of your system software loosen its tight hold on RAM

Holy Spell Check, Frat Man!

As a theology student, I use a lot of biblical Greek and Hebrew in my word processing. Is there any way I can make my Word 6 spelling checker skip all words in non-English fonts?

Tae Suk Kim, Philadelphia, PA

Chris: What a nifty idea — a spelling checker that allows filtering by font. Regrettably, it doesn't exist in any word-processing program I'm familiar with. (But when it shows up in Microsoft Word 9, what do you say we split the profits after we sue the pants off the Redmond crowd?)

Bob: Are you going to be this feisty all day? If so, I'll stand back and let you start this one off.

Chris: Fair enough.

You can work around this problem by reading page 107 of the Microsoft Word 6 manual. Microsoft kindly lets you skip certain blocks of text — the Greek and Hebrew passages, in your case — by selecting the text, choosing Language from the Tools menu, and then choosing No Proofing under Mark Selected Text As. Word 6 will now skip that text during the spelling check.

Because this procedure requires far too many steps for my liking, I wrote a little Word 6 macro to speed things up. It goes like this:

```
Sub MAIN
ParaDown 1, 1
ToolsLanguage .Language = "0"
End Sub
```

Before firing the macro, place your cursor at the beginning of the paragraph you want to exclude from the spelling check. That `ParaDown 1, 1` selects the paragraph subsequent to the cursor. If you want control over how much text is selected, delete `ParaDown 1, 1`, but then you'll have to select the text manually.

Bob: I have another solution, but unfortunately it means buying another word processor. Nisus Writer not only supports foreign languages far better than any other word processor on the planet but it also lets you select text noncontiguously. To spell-check your English text, just hold down the Command and Option keys and select those passages that contain English. The Nisus spelling checker will offer suggestions on only the highlighted passages.

Chris: If you'd like to spell-check your documents that contain more than one language in one fell swoop, Nisus and Microsoft will be more than happy to provide you with foreign-language dictionaries — at extra cost, of course.

The Slimmest System

My mom gave me her old Mac SE with 4 MB of RAM. Because its memory is so limited, I want to create the smallest System Folder possible, but I'd nevertheless like to be able to use modern software and to surf the Internet with this machine.

Allison Forrester, via the Internet

Chris: Great! A chance to break out my old SE. Bob, start 'er off while I extract the old darling from my closet.

Bob: This could take a while.

Chris: [*rummage, rummage*] Wow! Here's my Atari 5200 game console.

Bob: While we wait for Chris, I'll explain why System 6.0.x isn't your best choice.

Chris: [*dig, sift*] Cool! A typewriter.

Bob: Although you can create a tiny System Folder with System 6, you're going to find that a lot of software written in the last few years won't run under it — there are exceptions of course, and of those applications, most work with System 6.0.4 or better. Even though System 7 is going to eat up a few hundred more kilobytes of RAM, it's worth the loss to be able to use more applications.

How you coming?

Chris: [*emerging triumphantly*] Got it!

During all this stalling for time, I created a lank and lean, Internet-ready, System 7-based System Folder. Follow along at home, folks, and I'll show you how you can do it too.

As much as I love Mac OS 7.6 and its predecessor, System 7.5, these OS versions are too fat for Allison's purposes — and heck, 7.6 doesn't run on an SE anyway. I therefore loaded System 7•, which is available for free, onto my compact Mac. (You can download this version from Apple's Web site.)

Bob: For those who don't remember, that • indicates that System 7 Tuner was applied to the original System 7. The Tuner squashed a bug that made files disappear.

Chris: I then opened the System file and stripped out all the sounds — saving a whopping 5K. Next I removed everything from the Control Panels folder — remembering to set the disk cache to 32K before removing the Memory control panel. I added Config PPP and MacTCP 2.0.6, because Allison wants to surf the Web — she'll be doing so at a snail's pace, due to the SE's slow serial port. My new slim Extensions folder contains only PPP and System 7 Tuner. Because fonts don't use system memory, I left 'em in place.

Bob: And the final memory tally?

Chris: Just the slightest hair under 1 MB — 999K. This leaves Allison three whole megabytes to play with — not enough to run a twentieth of Microsoft Office, granted, but plenty for using a slim word processor, communications application, or monochrome game.

Mac OS 7.6 Slimnastics

I was very excited to get my Mac OS 7.6 upgrade in the mail yesterday, but I have one complaint: This system takes up 12 MB of RAM. My previous system required only 7. How can I regain my lost memory without having to resort to virtual memory?

Ben Fehrenbacher, La Crosse, WI

Chris: First of all, although you say you don't like using virtual memory, you can regain about 2 MB of RAM by using it. In

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To download the shareware mentioned in this article, go to www.macdownload.com

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our informal tests, the full installation of Mac OS 7.6.1 used a little under 13 MB of RAM with virtual memory off and a little over 10 MB with it turned on. That's roughly 2.5 megs you can regain by turning VM on.

Bob: Just set the amount of virtual memory to 1 MB more than your real RAM, and forget it. It won't slow you down, but all of your software, including the OS, will require less RAM.

Connectix's RAM Doubler 2 provides even more benefits and is faster than Apple's virtual memory.

Chris: Another way to reduce your system's memory appetite is to apply the same kind of thinking it took to get the system in the Mac SE in the previous question to under 1 MB — throw out System Folder items you don't really need. Mac OS 7.6 has lots of cool stuff, but you don't need all of it. Have a look at the "System Folder Weight-Loss Plan" table for a list of control panels and extensions that may be expendable and their RAM requirements. By looking at the table, you can see how much RAM you can regain. For instance, disabling such memory hogs as ATM, QuickDraw GX, OpenTransportLib, and Foreign File Access will get you almost 2 MB.

Be careful what you disable. Don't, for example, disable OpenTransportLib if you use Open Transport to connect to the Internet. And don't disable QuickDraw GX if you're one of the three people out there who actually uses it.

Bob: For a more complete list of control panels and extensions as well as their RAM requirements, check out the shareware InformInit or my latest book, *Mac OS 7.6 for Dummies* (Foster City, CA: IDG Books, 1997).

Cross-Platform Coupling

I own a Mac clone (from UMAX), and my fiancée is buying a PC. However, we both now want a laser printer. What are the best laser printers out there that allow simultaneous connection of a Mac and a PC?

Tim Rumbaugh, via the Internet

Chris: Tim, even though Bob and I appear in a computer-related publication, we're willing to occasionally extend our helping hands outside the boundaries of strictly digital relationships.

Bob: Hold on a second, bud. Where are you going with this?

Chris: That should be obvious — Tim and his fiancée are completely ill-matched. Mr. Rumbaugh, through his adoption of a quality Macintosh clone, has clearly demonstrated that he's a flexible, cutting-edge kind of guy. His fiancée, opting for the plodding and inferior status-quo represented by PCs, shows she'll never be more than a dreary stick-in-the-mud. Oh, I know such couples who've managed to make it through life, but think of how their poor offspring will suffer. It's tragic, tragic.

Bob: And you wonder why we get those "cut the crap" letters.

Tim, if you're still reading, allow me to apologize for my partner's rudeness and let's see if one of us can help you out. When I need this kind of information, I refer first to *MacUser*'s Web page. Here you'll find a searchable database of products with mouse ratings. When I glanced through the ratings for monochrome laser printers, I found out about the article "Best Monochrome-Laser-Printer Values," on page 72 of the March '97 issue.

If Chris can stay on-topic I'll let him jump in here.

Chris: A good way to meet other, more suitable women is through a Macintosh User Group. I have a list here that . . .

Bob: OK, I can see it's up to me. Tim, you and your perfectly suitable fiancée don't need all the bells, whistles, and — most important — expense of many of the printers discussed in the article I mentioned. You simply need a printer that has both a serial port and a parallel port, produces crisp output, and won't cost you a fortune — in short, you should take a look at Hewlett Packard's LaserJet 6MP. It offers 600-x-600-dpi printing, Level 2 PostScript, and 8-ppm output and costs under a thousand bucks.

The HP LaserJet 5MP — predecessor of the 6MP — also works just dandy with both a Mac and a PC.

Chris: I have one more suggestion that may save the marriage. Simply convince your wife-to-be that what she really wants is a Mac that can run Windows — a Power Macintosh 4400/200. It has a PowerPC

System Folder Weight-Loss Plan *Items you may not need*

With every new version of system software from Apple, we get new control panels and extensions that eat up RAM. Here's a list of System Folder items from Mac OS 7.6 that can be thrown out if you don't need them. Make sure you have a backup of each item, just in case you need to reinstall it.

Control Panel or Extension	RAM Req.
~ATM	900K
QuickDraw GX	478K
OpenTransportLib	194K
Foreign File Access	128K
ColorSync	105K
Apple CD-ROM	103K
Printing Lib	97K
AppleShare	65K
Energy Saver Extension	64K
Apple Menu Options	47K
AppleScript	41K
Speech	37K
QuickTime	37K
MacLinkPlus Setup	32K
Control Strip	28K
Apple Guide	24K
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WorldScript Power Adapter	23K
PC Exchange	19K
ObjectSupportLib	18K
MacOS Easy Open	16K
Auto Remounter	12K
Printer Share	12K
Speech Manager	12K
WindowShade	7K
Date & Time	5K

Reader Tip · *Photoshop Shortcut*

Better Images in Photoshop

I've discovered a better way to open Kodak Photo CD images that improves image quality *and* saves time.

Point your browser (or Fetch) to ftp://ftp.kodak.com/pub/photo-cd/drivers/dd0256.kqx to download the Kodak Photo CD Acquire Plug-in. Install the plug-in as directed in the Read Me document. When you next open Adobe Photoshop, you'll find the Kodak Photo CD v.3.0 option under Acquire on the File menu. When you use this option to open a Photo CD image, you'll be able to convert the image to CMYK or grayscale, choose four levels of sharpness, change the image's size, and rotate the image — all via a single dialog box. You can even preview your image before opening it in Photoshop. It's free and fast. What a deal.

Mark Winchester, via the Internet

603e RISC processor *and* a Cyrix PR166 6x86 processor. And it comes with both Mac OS and Windows 95 preinstalled.

A Gamer's Best Friend

Whose joystick works best with games?

Paul Allen, via the Internet

Chris: Thank goodness, a question that addresses real-world computing concerns.

As a guy who spends way more time in the loving embrace of computer games than is good for any sort of social life, take it from me ...

Bob: Before we go any further, are you *that* Paul Allen? The one who owns the Portland Trailblazers and used to be best friends with Bill Gates? Nah. That Paul Allen, being a cofounder of Microsoft and all, probably wouldn't be using a Mac.

Chris: Ahem. As I was saying, the brand of joystick you choose is a personal decision. What may be the dream setup for me may be the pits for you. Also, which game controller you buy depends a great deal on the kinds of games you play. That said, we're more than happy to air our gaming-hardware biases and let you decide how they apply to your life and times.

Bob: I'll start with an easy one. If you play car-racing games such as Sierra On-Line's IndyCar Racing II, get the Formula T2 Driving Wheel ($155 estimated street), from ThrustMaster (503-615-3200; www.thrustmaster.com). It's a steering-wheel-and-pedal combo you plug into an ADB port. Now that I've used it, I wouldn't go back to driving my Indy car with a regular joystick if my life depended on it.

Chris: Now for flight simulators. Two of the most popular plane games in the Mac realm are Graphic Simulations' F/A-18 Hornet and Parsoft's A-10 Attack!. Both of these sims feature modern aircraft you control via about a jillion keyboard commands. A simple two-button stick is barely enough to get you off the ground, much less let you rule the skies. If you intend to be a flying ace, you need a complete button-studded flight-control system — a joystick, a throttle, and a set of rudder pedals. You've got two choices: the ThrustMaster FCS (Flight Control System), WCS (Weapons Control System), and RCS (Rudder Control System) or the F-16 Fighterstick (see Figure 1), Pro Throttle, and CH Pedals, from CH Products (800-624-5804 or 619-598-2518; www.chproducts.com). Either flight-control system will run you a bit over $300.

Each setup has advantages. The CH Products devices have more buttons and toggle switches than those from ThrustMaster, and you can use the CH Pedals for racing games as well as for flight sims. The CH Products controllers are sturdy, but they're on the big-and-tall side; those with smaller hands may have problems with the F-16 Stick and Pro Throttle. Although the ThrustMaster controllers feel a little less sturdy, they fit beautifully into my hand. Finally, the ThrustMaster software lets you make a printout of your key configuration — how you've set up the stick, throttle, and pedals. With the CH Products controllers, expect to spend a fair time scribbling down your button configurations.

Bob: If you don't need all those buttons, check out the Blackhawk joystick ($35 estimated street), from Advanced Gravis (800-663-8558 or 604-431-5020; www.gravis.com) — it has enough buttons to keep even Chris happy and comes with good software. CH Products' Flightstick Pro ($80 estimated street) is a nice, solid stick with only four buttons — four's plenty for flight sims such as Looking Glass Technologies' Flight Unlimited or Graphic Simulations' Hellcats over the Pacific.

If you play a lot of arcade games, you'll want a gamepad, such as the CH Gamepad ($30 estimated street), to save wear and tear on your tendons.

Chris: And finally — because the idea is so cool and it seems to have become my mission in life to promote the darned thing — take a long and loving look at the ChoiceStick ($39.95 list), from Kernel Productions (302-456-3026). It's a black box that lets you connect any Sega-style (and hopefully, by the time you read this, PC-style) game controller to your Mac.

Photography · Pavlina Eccless

***Figure 1** · The more buttons the better. If you're playing a complex Mac flight-simulator game, a joystick such as this button-studded F-16 Fighterstick, from CH Products, is crucial.*

Bob LeVitus is the Mac columnist for the Houston Chronicle *and a consultant to the Motorola Computer Group. Christopher Breen is the author of* The Macintosh Bible Guide to Games, *published by Peachpit Press.*

Reader Tips · *Communications*

Troubleshooting with Eudora

Here's how to use Qualcomm's Eudora 3.0.x in order to get information about your Mac system that could be useful for troubleshooting:

Open a new message (Command-N), and place your cursor within the body of the message. Now go to the Apple Help menu (the question-mark icon in the menu bar) and select Insert System Configuration. In a few seconds, you'll have a list including machine type, system version, processor, RAM information, version numbers of Eudora and Open Transport, and a list of active extensions and control panels.

You can also get this type of information from Apple System Profiler, but this program comes only with Mac OS 7.6.

Bradley Yi, via the Internet

Save Frames

As pointed out in Mike Higgins' tip (May '97, page 95), Navigator Gold can locally save Web sites for offline browsing. However, the method described — choosing Edit Document from the File menu — won't work if the page you are viewing uses frames. Because Navigator Gold 3.0's editor doesn't support frames, you must follow this procedure to view framed pages for offline browsing:

While on the main page, choose Save As from the File menu. In the resulting dialog box, select As Source from the pop-up menu. Create a new folder for your page, and save the source file into this folder. For each frame on the page, repeat the following:

Position the cursor anywhere within the frame, and hold down the mouse button until the pop-up menu appears. Choose "New Window with this Frame."

In the new window, choose Edit Document from the File menu (or click on the Edit button in the tool bar) and save all files into the folder in which you saved the source file. To view pages that have frames, select Open File in Browser from the File menu and choose the page's source file.

Max Kustiner, via the Internet

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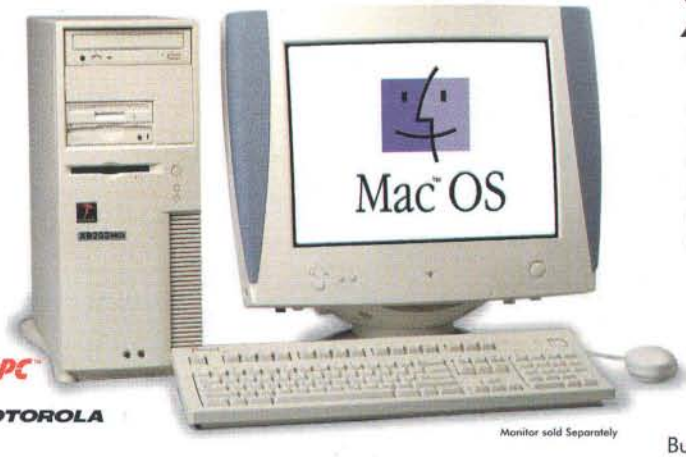

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Description	Model	Access	Interface	RPM	Int	Ext
1.2GB Tempest	QM31280TMS	10.5ms	Ultra SCSI-3	4500	$199	$249
2.1GB Tempest	QM32100TMA	11ms	Fast ATA-2 (IDE)	4500	$209	----
2.1GB Tempest	QM32150TMS	10.5ms	Ultra SCSI-3	4500	$259	$309
2.1GB Stratus	QM32160STS	10ms	Ultra SCSI-3	5400	$299	$349
3.2GB Tempest	QM33200TMA	11ms	Fast ATA-2 (IDE)	4500	$249	----
3.2GB Stratus	QM33240STS	10ms	Ultra SCSI-3	5400	$359	$409
3.8GB Tempest	QM33840TMA	11ms	Fast ATA-2 (IDE)	4500	$299	----
4.3GB Stratus	QM34320STS	10ms	Ultra SCSI-3	5400	$429	$479
4.5GB Atlas II	QM34550ALS	8ms	Ultra SCSI-3	7200	$729	$779
4.5GB Atlas II	QM34550ALW	8ms	UltraWide SCSI-3	7200	$849	$899
6.4GB Stratus	QM36480STS	10ms	Ultra SCSI-3	5400	$589	$639
9.1GB Atlas II	QM39100ALS	8ms	Ultra SCSI-3	7200	$1329	$1379
9.1GB Atlas II	QM39100ALW	8ms	UltraWide SCSI-3	7200	$1399	$1449

Western Digital — Western Digital drives carry a 5 Year Warranty

Description	Model	Access	Interface	RPM	Int	Ext
2.1GB Enterprise	WDE2170S	8ms	Ultra SCSI-3	7200	$539	$589
2.1GB Enterprise	WDE2170W	8ms	UltraWide SCSI-3	7200	$589	$669
4.3GB Enterprise	WDE4360S	8ms	Ultra SCSI-3	7200	$699	$749
4.3GB Enterprise	WDE4360W	8ms	UltraWide SCSI-3	7200	$749	$829

Seagate — Seagate drives carry a 5 Year Warranty

Description	Model	Access	Interface	RPM	Int	Ext
2.1GB Barracuda 4LP	ST32171N	8.5ms	Ultra SCSI-3	7200	$579	$629
2.1GB Barracuda 4LP	ST32171W	8.5ms	UltraWide SCSI-3	7200	$629	$709
4.3GB Barracuda 4LP	ST34371N	8.5ms	Ultra SCSI-3	7200	$799	$849
4.3GB Barracuda 4LP	ST34371W	8.5ms	UltraWide SCSI-3	7200	$849	$929
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4.3GB Cheetah	ST34501W	8ms	UltraWide SCSI-3	10000	$999	$1079
9.1GB Barracuda 9	ST19171N	8ms	Ultra SCSI-3	7200	$1399	$1449
9.1GB Barracuda 9	ST19171W	8ms	UltraWide SCSI-3	7200	$1499	$1579
9.1GB Cheetah	ST19101N	8ms	Ultra SCSI-3	10000	$1649	$1699
9.1GB Cheetah	ST19101W	8ms	UltraWide SCSI-3	10000	$1719	$1799
23GB Elite 23	ST423451N	8ms	Fast SCSI-2	5400	$2899	$2999
23GB Elite 23	ST423451W	8ms	Fast&Wide SCSI-2	5400	$2999	$3099

IBM — IBM drives carry a 5 Year Warranty

Description	Model	Access	Interface	RPM	Int	Ext
4.3GB UltraStar	09J1035	8.5ms	Ultra SCSI 3	5400	$569	$619

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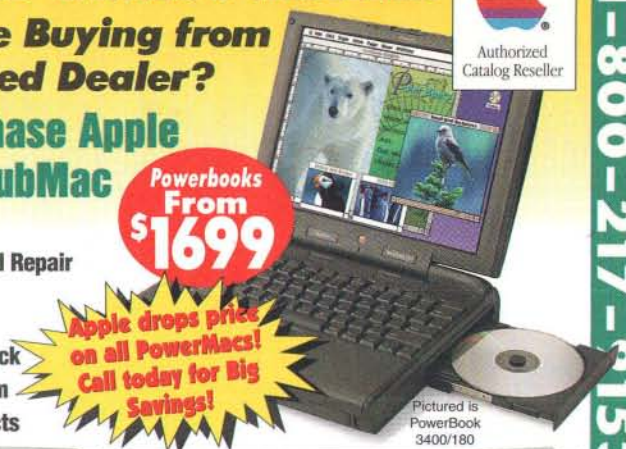

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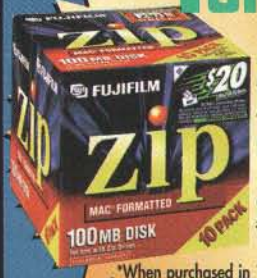

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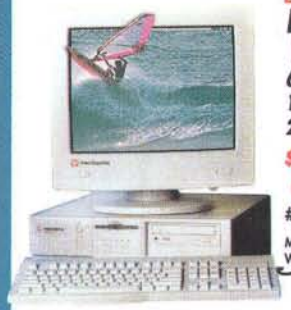

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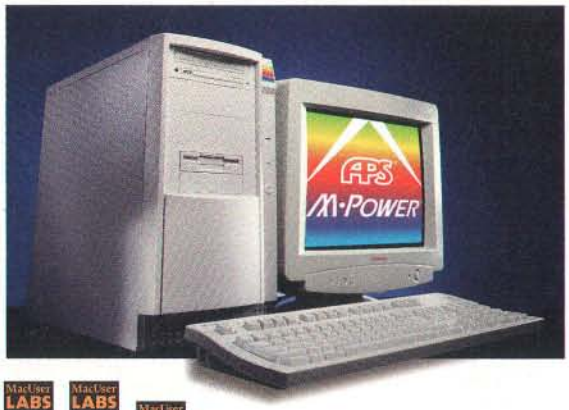

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Hard Drive	✔ 2.5GB	2GB
Internal CD-Rom	✔ 16X	12X
RAM	✔ 32MB	✔ 32MB
Cache	✔ 512K level 2	256K level 2
VRAM	✔ 2MB	✔ 2MB
Monitor	✔ 15" Philips/Magnavox display	None
FREE Software	✔ Yes ($1000)	Limited
Warranty	✔ 2 yr. limited	1 yr. limited
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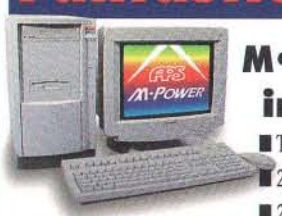

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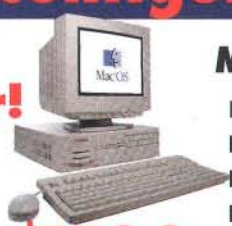

M•POWER 603e200

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APS Q 6400	Quantum Fireball Stratus, 6236MB, 5400 rpm	579.95	649.95	679.95
APS Q 4500	Quantum Viking, 4345MB, 7200 rpm	699.95	769.95	799.95
APS Q 4300	Quantum Atlas II, 4341MB, 7200 rpm	779.95	849.95	879.95
APS ST 4300	Seagate Barracuda, 4148MB, 7200 rpm	N/A	899.95	929.95
APS ST 4500	Seagate Cheetah, 4348MB, 10000 rpm	N/A	N/A	1199.95
APS Q 9000	Quantum Atlas II, 8682MB, 7200 rpm	1299.95	1369.95	1399.95
APS ST 9000	Seagate Barracuda, 8600MB, 7200 rpm	N/A	1499.95	1529.95
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APS ST 23000	Seagate Elite, 22100MB, 5400 rpm	N/A	N/A	3199.95*

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- 200MHz Speed
- 32MB RAM expandable to 160MB
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- 1MB V-RAM upgradable to 4MB
- 2.5GB Hard Drive
- 8X Internal CD-Rom Drive
- Motorola 28.8 Data/fax Modem

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- Minitower w/PowerPC 604e Processor
- 200MHz Speed
- 32MB RAM expandable to 160MB
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- 8X Internal CD-Rom Drive
- Five PCI Expansion Slots

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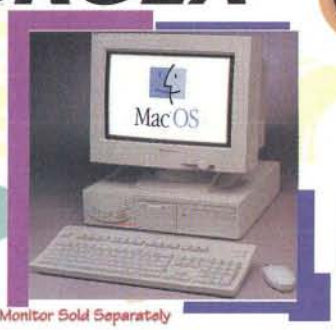

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- Three PCI Expansion Slots

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- Three PCI Expansion Slots

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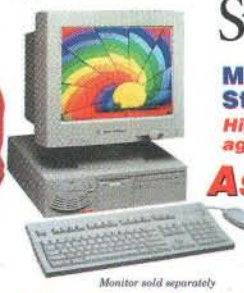

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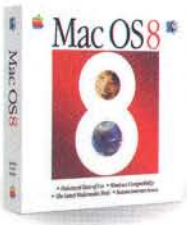

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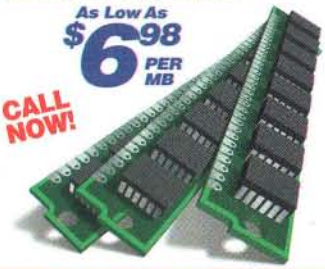

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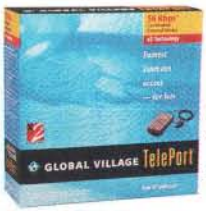

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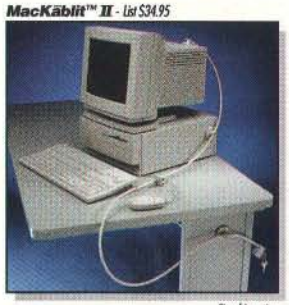

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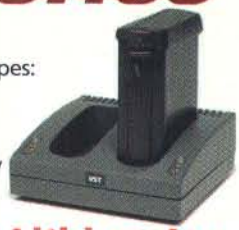

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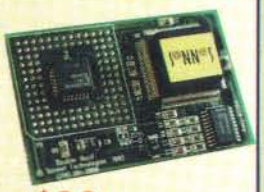

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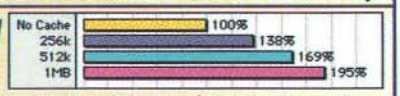

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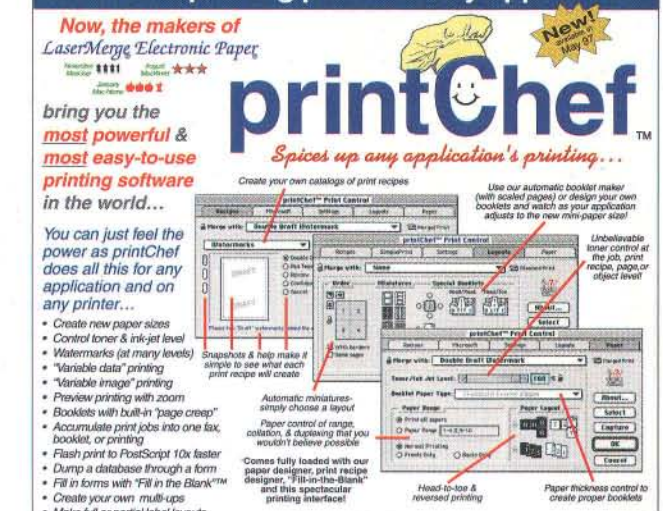

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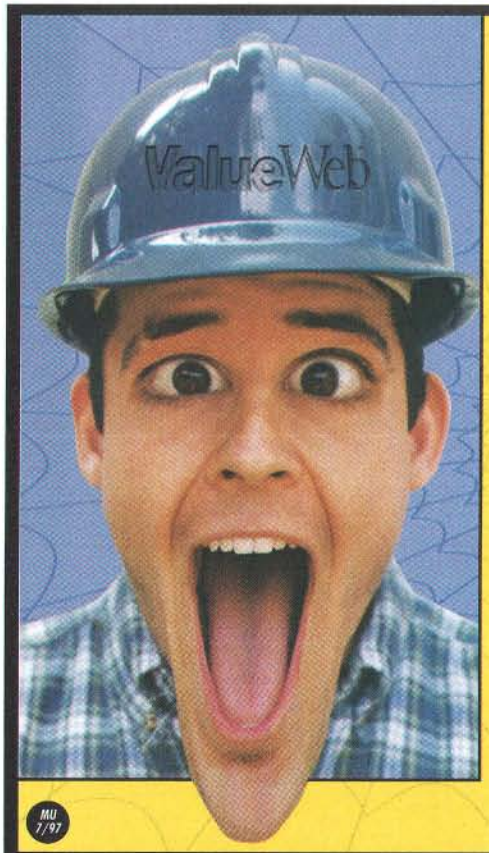

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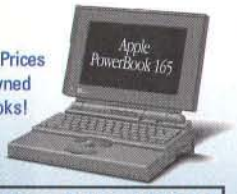

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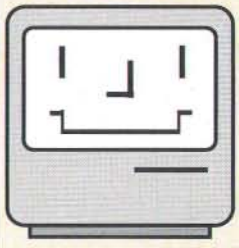

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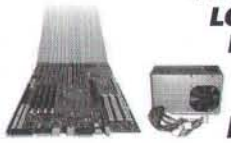

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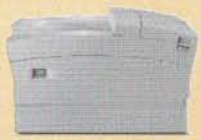

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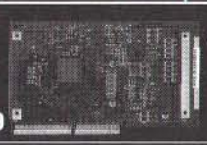

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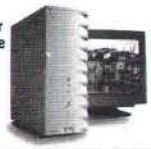

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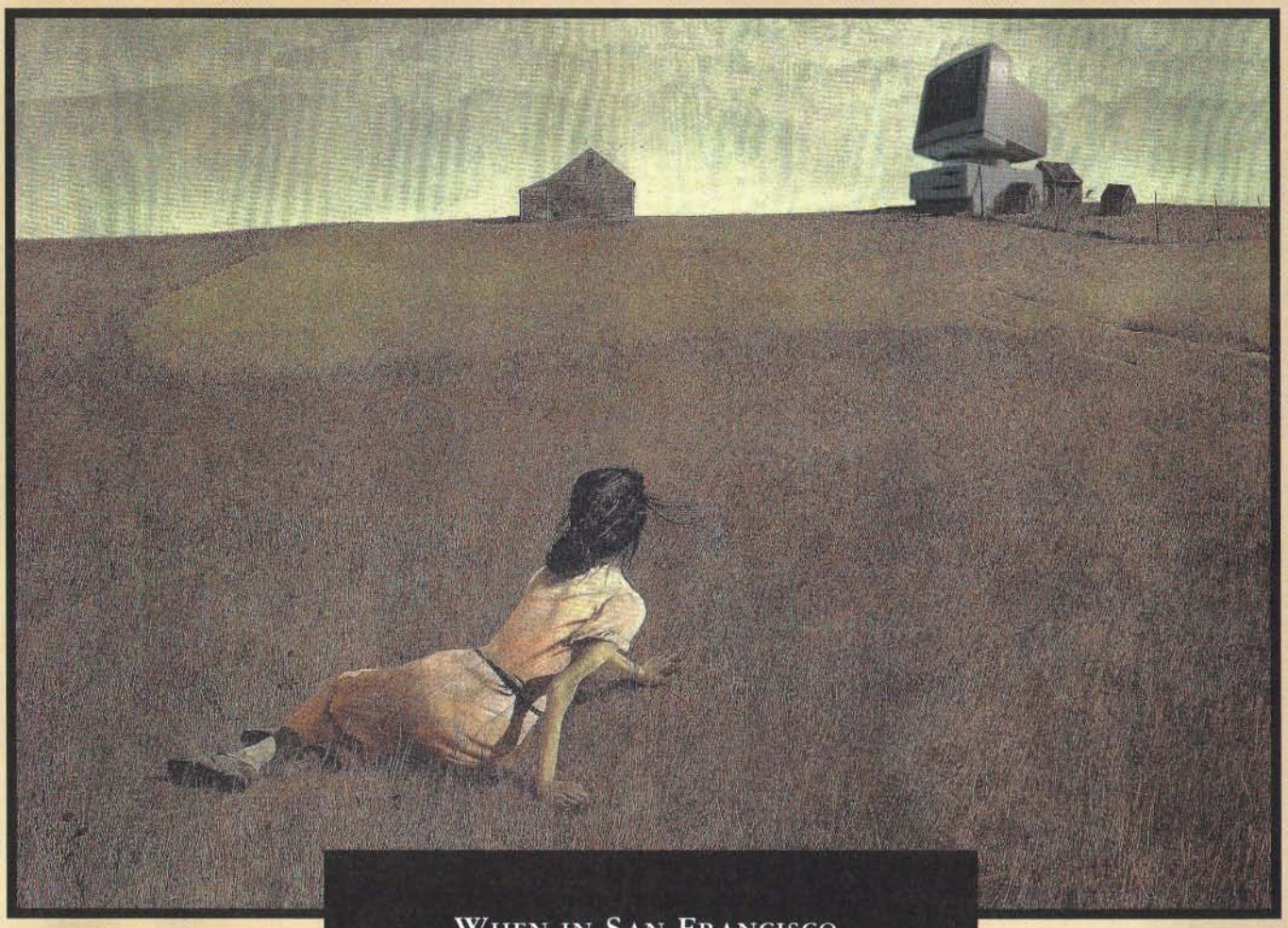

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By Philip Dyer
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MacUser's 1997 Shareware Awards

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Illustration · David Ricceri

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Carl Backstromm, Nisseb Software · $5
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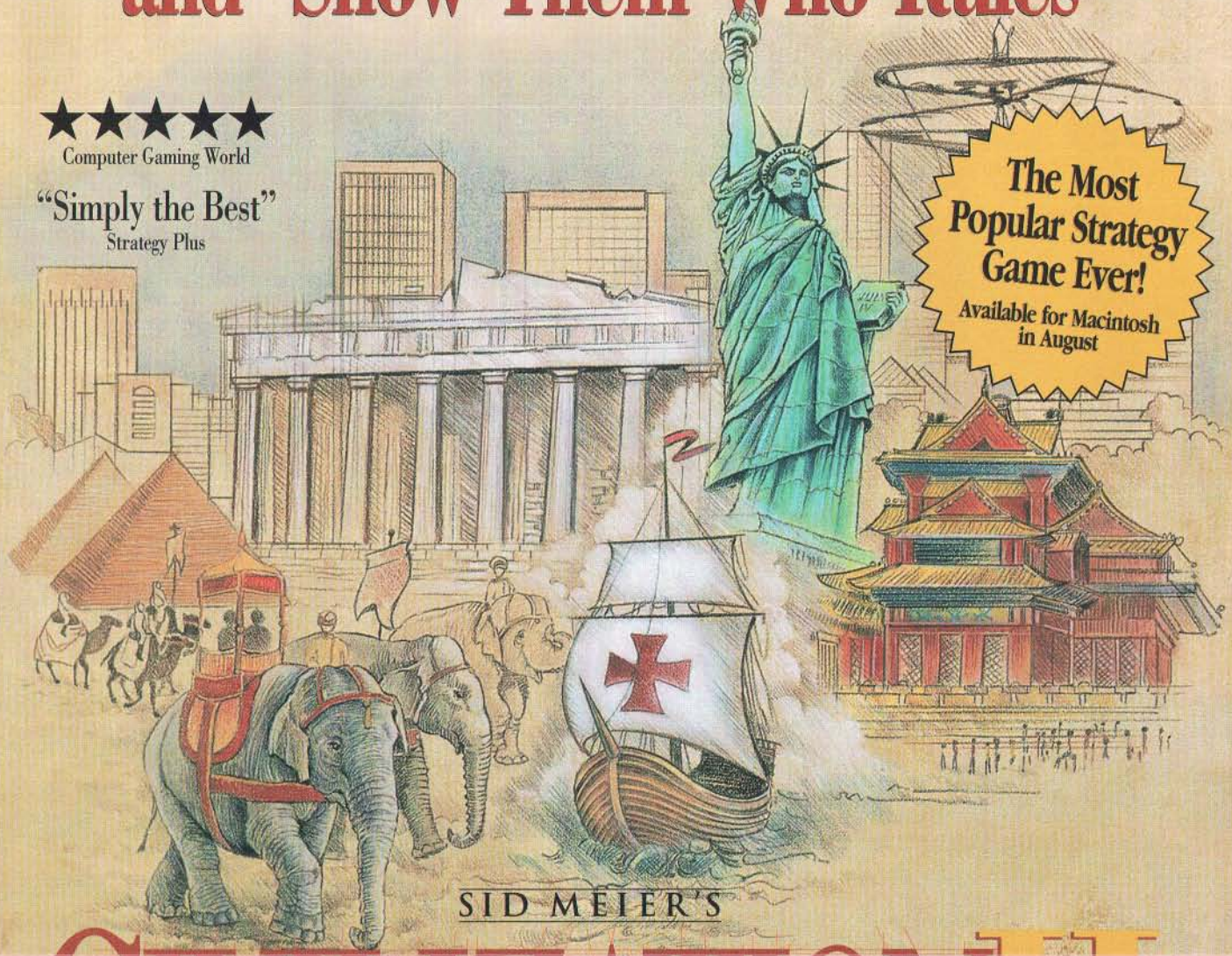

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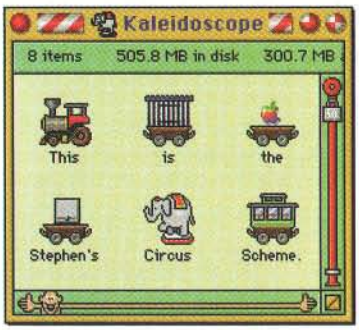

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Greg Landweber, Fred Bass, and Amargosa Software · $20
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Best Way to Boldly Go Where No One's Gone Before
Starry Night
Sienna Software · $28
This amazing application shows you *every* star, planet, and constellation in the galaxy, with detailed information about each. You can view the sky at any time of day or night, in any year, from any place in the solar system.

A Server's Best Friend
Okey Dokey Pro
Dan Walkowski · free
This control panel saves you from those Web-site-killing modal dialog boxes by automatically choosing the default button (usually "OK") after a user-specified amount of time. Okey Dokey Pro lets you choose which applications it will respond to and can even take snapshots of dialog boxes it's answered.

Best Internet Face-lift
NetFinder
Peter Li and Vincent Tan · $15
NetFinder is the first FTP client software that makes any FTP server's interface look like a Mac OS interface. You can choose from multiple viewing options, rename files just by clicking and typing (where allowed), and even resume an interrupted file transfer.

Best No-Brainer Utility
Click, There It Is!
Richard C. Cardona · $5
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Best Gumshoe
UltraFind
UltraDesign Technology · $38
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Chris Hawk, Social Engineering
free
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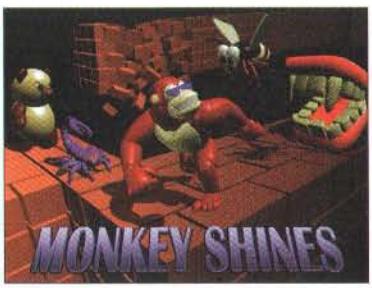
Snapz Pro
Andrew Welch, Ambrosia Software · $20
Here's a screen-shot utility that can capture the entire monitor, any open window, or any section you grab with the cursor. Snapz Pro offers cropping, scaling, and dithering. When you save a file, you can choose from a variety of color palettes and file types.

Most Frustrating Game
Enigma *(shown below)*
freeVerse software · $15
This modern update of Mastermind challenges players to unlock a series of locks by placing the correct colors in the right order inside empty circles. For added sadistic effect, random disasters make the task next to impossible.

Most Nostalgic Game
Monkey Shines *(shown below)*
Tim Phillips, Fantasoft · $20
Remember Donkey Kong? The big gorilla gets a full 3-D rendering here. Old-timers will enjoy Monkey Shines for its great blast-from-the-past value, but its lack of violence also makes it ideal for younger gamers.



Comeback of the Year
Marathon Evil
The EVIL Group · free
When Bungie announced that Infinity would be the last addition to the Marathon family, gamers around the world wept tears of blood. They'll be weeping tears of joy when they finish downloading this unbelievable Marathon scenario. It copies your existing Marathon Infinity files and hacks them into an all-new game.

Game Most Likely to Make You Buy an Abdominal-Workout Product
Exile III
Jeff Vogel, Spiderweb Software
$25
You're bound to spend hours exploring this role-playing adventure's underground labyrinths. In fact, you won't realize how long you've been playing until well after 2:00 A.M., when nothing but abdominal-workout infomercials are on TV. Rather than buying one, register this game — you'll get more use out of it.

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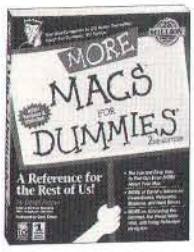

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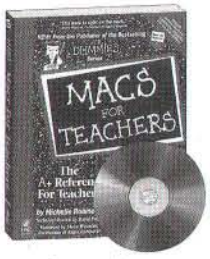

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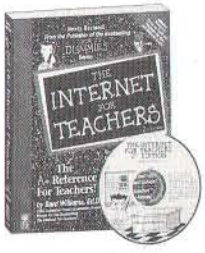

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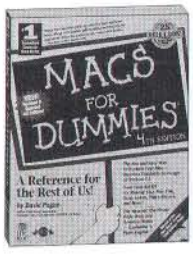

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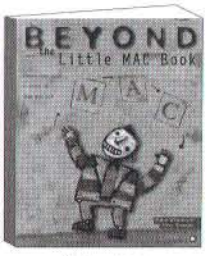

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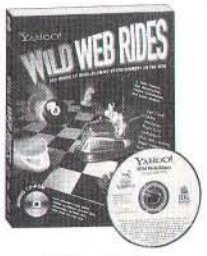

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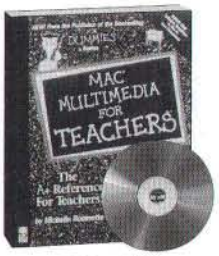

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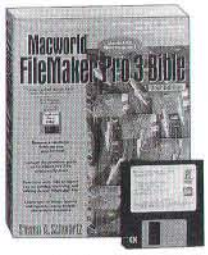

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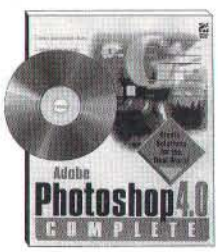

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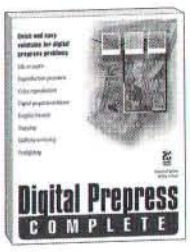

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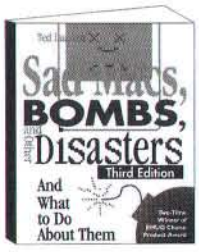

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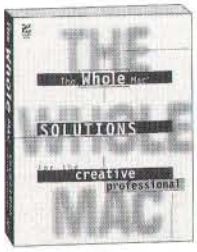

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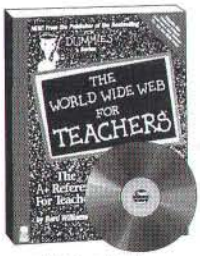

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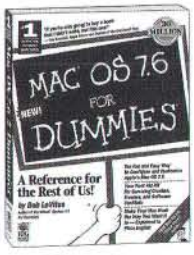

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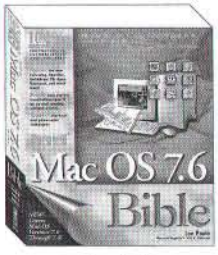

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By Roman Loyola

gameroom@macuser.com

The Game Room

Two graphic adventure games with great artwork and interesting themes, plus yet another Leisure Suit Larry title

Obsidian

★★★★

$49 *(list)*

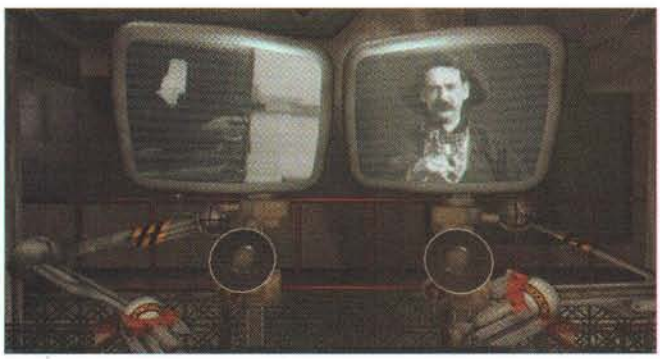
SegaSoft, Redwood City, CA
415-802-4400 or 888-734-2763
www.segasoft.com
Reader service: circle #426

I DON'T REALLY WANT to say it, but I can't think of a better way to describe Obsidian, so here goes: Obsidian is the first graphic adventure game that comes close to being like Myst. There, I said it. I'm cringing, but I said it. Now I'll make myself feel better by mentioning that I'm not actually a big fan of Myst. Yes, it was innovative back when it came out. But even then I thought the game was only good, not great.

Obsidian is good too. Heck, I like it better than Myst. I'd like it even more if it didn't suffer from one of the serious flaws that Myst had: It takes too long to make the transition from scene to scene. I got sluggish performance on a Power Mac 7100/80AV with Mac OS 7.6.1 and a 4x CD-ROM drive. Even having a large RAM allocation didn't help.

It's too bad the performance is such a glaring problem, because Obsidian has terrific 3-D graphics, an engaging story, and challenging puzzles. Like Myst, Obsidian takes place in a surreal otherworld where the rules of reality are broken. The game is set in the year 2066, and you play a scientist who gets caught in the Obsidian, a rock that has a world inside it.

The scenes inside the Obsidian are based on the dreams of the two main characters, which explains the many bizarre sights — rooms with walls and ceilings that are the floors for other rooms, a giant mechanical spider, and a self-automated product of technology that wants to rule the world.



The Last Express

★★★★

$49 *(list)*

Brøderbund Software, Novato, CA
800-521-6263 or 415-382-4740
www.broderbund.com
Reader Service: circle #427

WITH ITS ODD MIX of graphics, The Last Express is a game that will grab your attention right from the beginning. It features cartoonish 2-D characters making their way through a gorgeously rendered 3-D setting. At first, the effect left me lukewarm; but as I progressed further into the game, I started to appreciate the contrast in style. Combining this with an intriguing plot, The Last Express breathes new life into the graphic-adventure genre.

You play a young American who finds his best friend murdered on the Orient Express. You have three days and nights to solve the mystery by finding clues on the train and by interacting with other passengers.

The Last Express is well paced in several ways. First of all, there's plenty to do on the train, whether it be searching for objects or conversing with passengers. Being on a strict timeline — you have to complete particular tasks before each stop — also keeps the game moving along. The game runs well on first-generation Power Macs, and its transitions from scene to scene don't make your CD-ROM drive labor.

Add to all this its well-scripted dialogue and good acting, and you've got a game that feels complete.

Leisure Suit Larry: Love for Sail

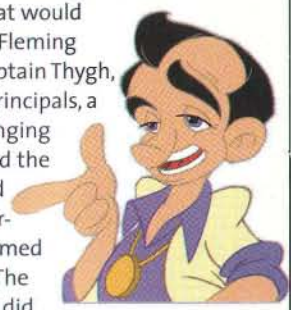
★★★

$54.95 *(list)*

Sierra On-Line, Bellevue, WA
800-757-7707 or 206-644-4343
www.sierra.com
Reader Service: circle #428

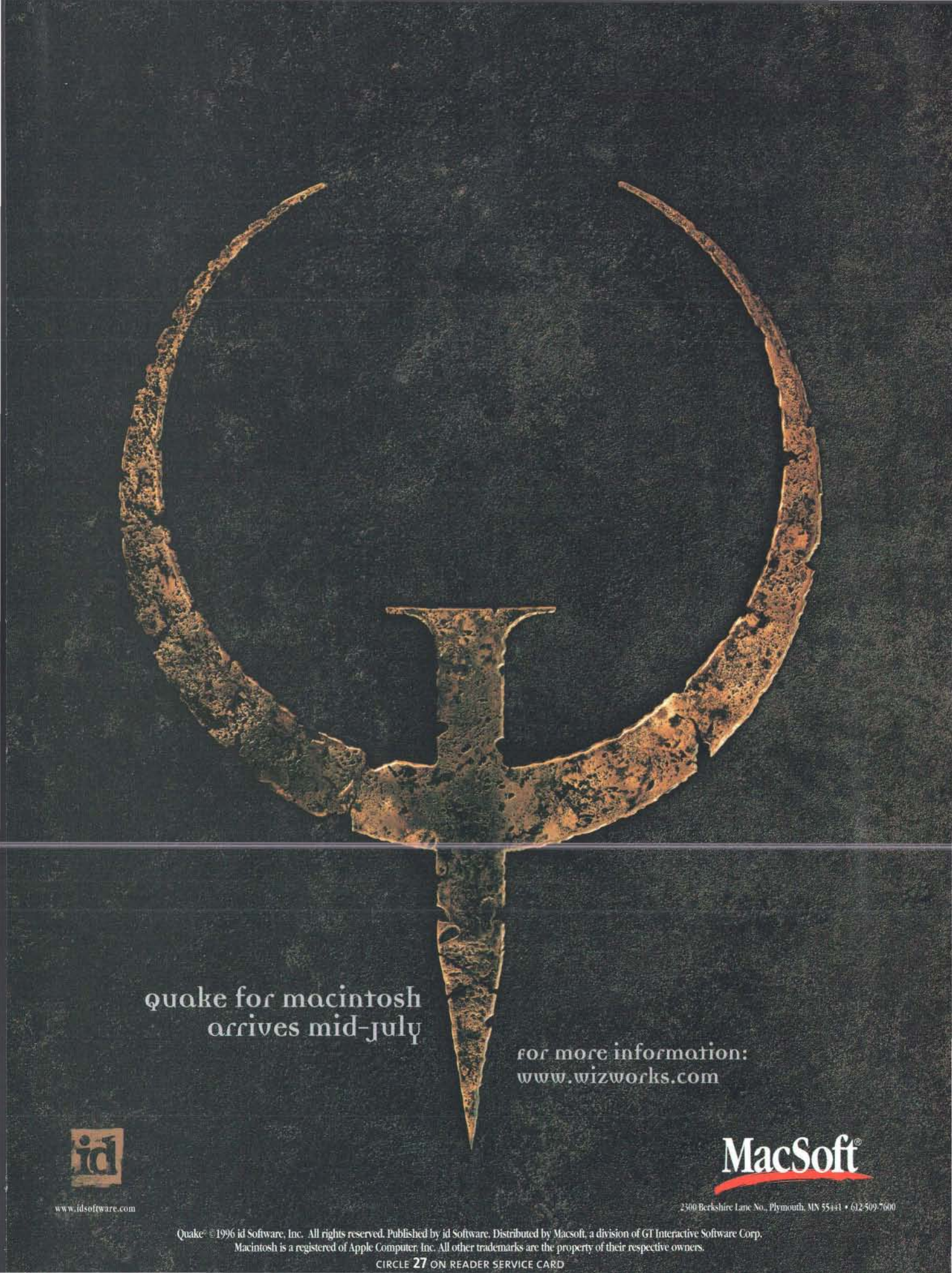
SEE MY E-MAIL address up there, near my byline? I want someone — anyone — to write me and intelligently tell me why Leisure Suit Larry is so gosh-darn popular. The *seventh* game in the series, Leisure Suit Larry: Love for Sail, will probably sell well, no matter how much its popularity mystifies me.

Love for Sail isn't much different from any other Larry game. You play Larry, a tacky, perverted loser who trolls around making a buffoon of himself and spending most of his time trying to pick up women of Russ Meyer proportions. Here, you wander around a cruise boat, participating in libidinally inspired activities. You run into characters with names that would make Ian Fleming proud: Captain Thygh, Victoria Principals, a buxom singing duet called the Juggs, and a surly bartender named Johnson. The one part I did enjoy was the Where's Waldo-like game in several scenes, in which you search for a banana-shaped object clad in a red-and-white-striped sweater.



As you've probably guessed, this one, like all the other Larry games, is filled with humor reminiscent of B movies such as *Porky's, Porky's II: The Next Day,* and *Porky's Revenge.* The jokes and plays on words didn't bother me at first, but after I'd spent a couple of hours with the game, they got tiring. The most disappointing aspect of Love for Sail is that it shows no evolution in game development. It uses the very same elements found in previous Larry games: 2-D graphics, basic (and sluggishly slow) animation, limited interactivity, and a linear plotline.

If you ever meet Associate Editor Roman Loyola, ask him to do his impression of Isaac of The Love Boat.



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CIRCLE 27 ON READER SERVICE CARD

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Why Windows 95 Sucks!
No rhymes but good info at www.csclub.uwaterloo.ca/~vtluu/ww95s/

By Andy Ihnatko
andyi@macuser.com

'. . . Window(s) Breaks'*

Win 95 drives a proud man to poetry

Four little Windows boxes
Sitting in a row,
Like lambs before the slaughter, they
Could never really know
That Death awaited each of them
They never would survive,
For Andy was determined to
Use Windows 95.

I had no choice, I must confess
Because I wrote this book
(Called *CYBER-SPEAK*. In bookstores now!
Surf Amazon and look)
And MSN had wanted me
To plug it, in live chat.
But MSN has one big flaw:
It doesn't work on Macs.

"Of course, you have a Windows box?"
The sysop said to me.
"What's your address? We'll ship to you
An MSN CD.
Installation is a snap,
I promise you'll have fun.
Did I forget to mention
That you can't use Win 3.1?"

And soon the thing was in my hands.
The carton had inside
Two fat packs of Setup disks
And one thin Setup Guide.
So I switched on my Packard-Bell
And got out that first disk.
That's when I saw, in type quite small,
"Requires 486."

Let me tell you all about
My Macintosh LC.
It's six years old, and yet it runs
System Seven Five-Point-Three.
My 386 has lots of life,
But to Microsoft, it's dead,
Which left three Windows boxes
To be tried in its stead.

Next I drove to Sister's house
And PC number Two,
A spiffy brand-new Pentium,
And I, without ado,
Began the installation but
It stopped, with this pure bull:
"Can't dupe your 1K .INI file
Because Drive C is full."

"It's *full?!*" I cried, in some distress,
"You sure could have fooled *me!*
The drive's a full one gigabyte . . .
Three hundred megs' worth free!"
But Windows smiled and went and trashed
Some random files, and so
It left one brain-dead Pentium
And one embarrassed Bro.

As time passed on, I worried, for
I neared the scheduled day,
But then I thought, "I'm such a fool!
The Cyber-Smith Cafe!
Its kiosks all run 95,
And most have MSN.
If I do the chat in *their* plush booths
I *needn't* try again!"

Illustration · Jack Mortensbak

Of course, you know how that turned out,
Just picture in your mind
Me nursing my fourth herbal tea
With manager behind
Attempting to determine why
The thing went on the blink.
Just giving it my user code
Had killed its network link.

Just one last chance remained to keep
My live-chat dreams alive:
I'd transplant to my Dad's PC
My PC's CD drive.
This drive was all his PC lacked,
He used it not a lot.
Though chances of success were slim
I thought I had a shot.

At this point, I just want to say
I'm one big hardware geek.
The things I've built, complete from scratch!
Are quite beyond belief.
But Jumpers! Drivers! IRQs!
For a simple CD drive!
Before I got this running, I'd
Need Windows 2005!

I canceled on my second chat
And hit a nearby bar
To ponder all that I had lost
Pursuing free PR.
My sister had been in my debt
(I'd helped her move, before),
But after this fiasco, I
Now owed her two moves more.

The Net cafe fixed its PC
It never was to blame
(And nor was I, but now I can't
Go there with my real name).
And as for Dad, well, that's a shame,
For his PC's still dead.
But that's OK, 'cause I lent him
A Mac to use, instead.

But there's a sweet end to this tale,
At last I met success!
I hit upon a method that
Requires no fuss or stress.
The install took just four mouse-clicks
And finished in a flash,
Not a single error message
Or a single hang or crash.
I know that Mac tips are my job
But these words are for all
Who face the wilting prospect of
A 95 install:
This is the *only* way to go.
I'll tell you how it's done:
With a Power Mac set up to use
Windows emulation.

*William Shakespeare, *Romeo and Juliet*, II, ii, I

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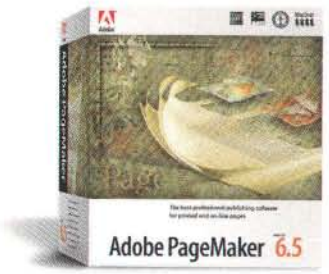

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